EMC® NetWorker®
Version 9.1

Updating to NetWorker 9.1 from a Previous NetWorker Release Guide

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As part of an effort to improve its product lines, EMC periodically releases revisions of its software and hardware. Therefore, some functions that are described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features.

Contact your EMC technical support professional if a product does not function correctly or does not function as described in this document.

Note
This document was accurate at publication time. Go to EMC Online Support (https://support.emc.com) to ensure that you are using the latest version of this document.

Purpose
This document describes how to update the NetWorker software.

Audience
This document is part of the NetWorker documentation set and is intended for use by system administrators during upgrading of the NetWorker software.

Revision history
The following table presents the revision history of this document.

Table 1 Revision history

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
</table>
| 03       | February 6, 2017 | Third release of this document for EMC NetWorker 9.1. Updated to include the following changes:
|          |                | • Added the error "Application blocked for security" to the chapter "Troubleshooting NMC GUI and NetWorker Server Connection Issues". |
|          |                | • Added information about the changes to savepnpc support in the Post Update Tasks chapter. |
|          |                | • Added a troubleshooting section for NMC updates on Linux. |
|          |                | • Updated the section "NMC Server features and system requirements" in the Software Requirements chapter. |
| 02       | January 5, 2017 | Second release of this document for EMC NetWorker 9.1. Updated to include support for direct upgrades from NetWorker 8.1.x to NetWorker 9.1.x and correcting the reference to the default NetWorker Authentication port from 8080 to 9090. |
| 01       | December 22, 2016 | First release of this document for EMC NetWorker 9.1. |
Related documentation
The NetWorker documentation set includes the following publications, available on EMC Online Support:

- **EMC NetWorker Online Software Compatibility Matrix**
  Provides a list of client, server, and storage node operating systems supported by the EMC information protection software versions. You can access the matrix at http://compatibilityguide.emc.com:8080/CompGuideApp/.

- **EMC NetWorker Administration Guide**
  Describes how to configure and maintain the NetWorker software.

- **EMC NetWorker Network Data Management Protocol (NDMP) User Guide**
  Describes how to use the NetWorker software to provide data protection for NDMP filers.

- **EMC NetWorker Cluster Integration Guide**
  Contains information related to configuring NetWorker software on cluster servers and clients.

- **EMC NetWorker Installation Guide**
  Provides information on how to install, uninstall, and update the NetWorker software for clients, storage nodes, and servers on all supported operating systems.

- **EMC NetWorker Updating from a Previous Release Guide**
  Describes how to update the NetWorker software from a previously installed release.

- **EMC NetWorker Release Notes**
  Contains information on new features and changes, fixed problems, known limitations, environment and system requirements for the latest NetWorker software release.

- **EMC NetWorker Command Reference Guide**
  Provides reference information for NetWorker commands and options.

- **EMC NetWorker Data Domain Boost Integration Guide**
  Provides planning and configuration information on the use of Data Domain devices for data deduplication backup and storage in a NetWorker environment.

- **EMC NetWorker Performance Optimization Planning Guide**
  Contains basic performance tuning information for NetWorker.

- **EMC NetWorker Server Disaster Recovery and Availability Best Practices Guide**
  Describes how to design, plan for, and perform a step-by-step NetWorker disaster recovery.

- **EMC NetWorker Snapshot Management Integration Guide**
  Describes the ability to catalog and manage snapshot copies of production data that are created by using mirror technologies on EMC storage arrays.

- **EMC NetWorker Snapshot Management for NAS Devices Integration Guide**
  Describes how to catalog and manage snapshot copies of production data that are created by using replication technologies on NAS devices.

- **EMC NetWorker Security Configuration Guide**
  Provides an overview of security configuration settings available in NetWorker, secure deployment, and physical security controls needed to ensure the secure operation of the product.

- **EMC NetWorker VMware Integration Guide**
  Provides planning and configuration information on the use of VMware in a NetWorker environment.
EMC NetWorker Error Message Guide
Provides information on common NetWorker error messages.

EMC NetWorker Licensing Guide
Provides information about licensing NetWorker products and features.

EMC NetWorker REST API Getting Started Guide
Describes how to configure and use the NetWorker REST API to create programmatic interfaces to the NetWorker server.

EMC NetWorker REST API Reference Guide
Provides the NetWorker REST API specification used to create programmatic interfaces to the NetWorker server.

EMC NetWorker 9.1 with EMC CloudBoost 2.1 Integration Guide
Describes the integration of NetWorker with CloudBoost.

EMC NetWorker Management Console Online Help
Describes the day-to-day administration tasks performed in the NetWorker Management Console and the NetWorker Administration window. To view the online help, click Help in the main menu.

EMC NetWorker User Online Help
Describes how to use the NetWorker User program, which is the Windows client interface, to connect to a NetWorker server to back up, recover, archive, and retrieve files over a network.

Special notice conventions that are used in this document
EMC uses the following conventions for special notices:

**NOTICE**
Identifies content that warns of potential business or data loss.

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**Note**
Contains information that is incidental, but not essential, to the topic.

Typographical conventions
EMC uses the following type style conventions in this document:

**Table 2 Style conventions**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bold</strong></td>
<td>Used for names of interface elements, such as names of buttons, fields, tab names, and menu paths (what the user specifically selects or clicks)</td>
</tr>
<tr>
<td><em>Italic</em></td>
<td>Used for full titles of publications that are referenced in text</td>
</tr>
<tr>
<td><strong>Monospace</strong></td>
<td>Used for:</td>
</tr>
<tr>
<td></td>
<td>• System code</td>
</tr>
<tr>
<td></td>
<td>• System output, such as an error message or script</td>
</tr>
<tr>
<td></td>
<td>• Pathnames, file names, prompts, and syntax</td>
</tr>
<tr>
<td></td>
<td>• Commands and options</td>
</tr>
<tr>
<td><strong>Monospace italic</strong></td>
<td>Used for variables</td>
</tr>
<tr>
<td><strong>Monospace bold</strong></td>
<td>Used for user input</td>
</tr>
<tr>
<td><strong>[]</strong></td>
<td>Square brackets enclose optional values</td>
</tr>
</tbody>
</table>
Table 2 Style conventions (continued)

| Vertical bar indicates alternate selections - the bar means “or” |
| { } Braces enclose content that the user must specify, such as x or y or z |
| ... Ellipses indicate non-essential information that is omitted from the example |

Where to get help
EMC support, product, and licensing information can be obtained as follows:

Product information
For documentation, release notes, software updates, or information about EMC products, go to EMC Online Support at https://support.emc.com.

Technical support
Go to EMC Online Support and click Service Center. Several options for contacting EMC Technical Support appear on the site. Note that to open a service request, you must have a valid support agreement. Contact your EMC sales representative for details about obtaining a valid support agreement or with questions about your account.

Online communities
Go to the EMC Community Network at https://community.emc.com for peer contacts, conversations, and content on product support and solutions. Interactively engage online with customers, partners, and certified professionals for all EMC products.

Your comments
Your suggestions help to improve the accuracy, organization, and overall quality of the user publications. Send your opinions of this document to DPAD.Doc.Feedback@emc.com.
PART 1

Preparing to Update the NetWorker software

This section provides you with the information to review before you update a NetWorker host and provides detailed information about the update procedure on each supported operating system.

This section includes the following chapters:

Chapter 1, "Preparing to Update the NetWorker Software"

Chapter 2, "Software requirements"
Preparing to Update the NetWorker software
CHAPTER 1

Preparing to Update the NetWorker Software

This chapter includes the following topics:

- Road map for updating the NetWorker software ........................................ 14
- Introduction .................................................................................................... 14
- Interoperability and backward compatibility .................................................. 15
- New NetWorker components .......................................................................... 16
- NMC client .................................................................................................... 17
- NetWorker daemons ...................................................................................... 18
- EMC Licensing Solution ............................................................................... 19
Road map for updating the NetWorker software

Use this road map to update the NetWorker software from a previous release.

Procedure

1. Review the Introduction chapter for general information.
2. Review the Software Requirements chapter for general requirements and considerations.
3. Review the Updating the NetWorker software chapter for instructions on how to update the software. To update the NetWorker software by using Package Manager or to update from a 32-bit version of NetWorker to a 64-bit version, review the Updating Methods chapter.
4. Review the Post Update Tasks chapter to test the NetWorker software functionality.
5. (Optional) If you update the NetWorker software from 8.1.x or 8.2.x, review the Reviewing the Migration Status chapter for information about changes in NetWorker that occur after you update.
6. Review the Troubleshooting NMC GUI and NetWorker Server Connection Issues chapter for information about how to troubleshoot issues that you might encounter after the upgrade completes.

Introduction

This guide provides you with the information to review before you update a NetWorker host to 9.1.x and provides detailed information about the update procedure on each supported operating system.

EMC recommends that you update the hosts in the datazone in the following order:

1. NetWorker server. On Linux, also configure NetWorker Authentication service.
2. NMC server.
3. All NetWorker storage nodes.
4. NetWorker clients.

Consider the following information before you update the NetWorker server:

- You can update NetWorker Server that runs version 8.1.x, 8.2.x, or 9.0.x directly to version 9.1.x.
- To update a NetWorker server that runs version 8.0.x to version 9.1.x, update the NetWorker server to version 8.2.x and then update the NetWorker server to version 9.1.x.

This guide uses NetWorker_install_dir and NMC_install_dir variables to describe the installation directories. The default installation path for the NetWorker and NMC software on Windows changed in some releases. The update process does not change the directory location. The following table summarizes the default directory locations that the NetWorker_install_dir and NMC_install_dir variables represent.
Table 3 Default installation directories for NetWorker and NMC software

<table>
<thead>
<tr>
<th>Earliest version of software installed on host</th>
<th>Default directory location used in the update process</th>
</tr>
</thead>
<tbody>
<tr>
<td>NetWorker 8.0.x or earlier</td>
<td>C:\Program Files\Legato\nsr</td>
</tr>
<tr>
<td>NetWorker 8.1.x, 8.2.x, and 9.x</td>
<td>C:\Program Files\EMC NetWorker\nsr</td>
</tr>
<tr>
<td>NMC server 8.0.x or earlier</td>
<td>C:\Program Files (x86)\Legato\Management\GST\</td>
</tr>
<tr>
<td>NMC server 8.1.x, 8.2.x, and 9.x</td>
<td>C:\Program Files\EMC NetWorker\Management</td>
</tr>
</tbody>
</table>

Interoperability and backward compatibility

Before you update any host in the datazone, review information about the interoperability and backward compatibility. If you are updating the operating system on a host, update the operating system first, and then update the NetWorker software.

The following table summarizes the NetWorker version interoperability and backward compatibility requirements.

Note

The module installation guides provides detailed information about how to upgrade NetWorker module clients, for example, NetWorker Module for Microsoft (NMM), NetWorker Module for SAP (NMSAP), and NetWorker Module for Databases and Applications (NMDA).

Table 4 NetWorker Interoperability Matrix

<table>
<thead>
<tr>
<th>NetWorker Server</th>
<th>Remote Storage Node host</th>
<th>Remote Client host</th>
<th>NMC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9.1.x</td>
<td>9.0.x</td>
<td>8.1.x/8.2.x</td>
</tr>
<tr>
<td>9.1.x</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>9.0.x</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>8.1.x/8.2.x</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>
New NetWorker components

NetWorker 9.0 and later includes several new components, including the NetWorker Authentication Service, Message Queue Adapter, the Block Based backup client, the Avamar client, and the NetWorker Extended client.

NetWorker Authentication Service

The NetWorker Authentication Service provides centralized token-based authentication to components in a NetWorker 9.1.x environment. You can configure the NetWorker Authentication Service to use a local user database or external identity providers (LDAP and AD) for authentication.

NetWorker Message Queue Adapter

The NetWorker Message Queue Adapter component on the NetWorker Server enables programs to use the message bus to access the NetWorker Server.

The NetWorker Message Queue Adapter daemon (nsrmqd) translates the communications that occur between a message protocol and NetWorker Remote Procedure Call (RPC) functions.

The Backup and Recovery Manager software and the Hyper-V File Level Recovery (FLR) feature in NetWorker Module for Microsoft (NMM) software use the message queue adapter to communicate with the NetWorker Server and NetWorker Server components.

NetWorker Block-Based Backups

Block-Based Backup (BBB) is a NetWorker software feature that enables you to back up data on a Windows or Linux host by traversing a volume or disk at the block level.

When you install the NetWorker software on a Window host, the installation automatically installs the files that the BBB feature requires. On supported 64-bit Linux hosts, install a separate BBB software package to provide a NetWorker host with BBB support.

The EMC NetWorker Online Software Compatibility Matrix provides more information about operating system support for BBB.

NetWorker Client

The NetWorker Client software communicates with the NetWorker Server to support backup and recover functionality. The software provides you with two client packages: a base client package and an extended client package. Install the NetWorker Client software on each host that requires backup and recovery support.

Before you install the NetWorker Client software, ensure that NetWorker supports the specific client operating system and hardware configuration. The EMC NetWorker Online Software Compatibility Matrix provides the most up-to-date information about compatibility.
NetWorker Extended Client package

The NetWorker software includes an NetWorker Extended Client package, which provides NetWorker hosts with additional feature support.

Install the NetWorker Extended Client package if you require the following functionality on the host:

- NetWorker Snapshot Management (NSM)
- Network Attached Storage (NAS) snapshot
- CLI utilities for server reporting and administration, for example `mminfo` and `nsrinfo`
- Firewall tunneling tools
- Cluster integration scripts
- Custom script integration tools (pre/post save)
- Audit log
- NetWorker Module for Meditech
- SCVMM Data Protection Add-in for NMM
- Recovery of NetWorker Module for Microsoft (NMM) 8.2.3 and 8.2.4 backups by using NMM
- Cloning and staging
- ProtectPoint for VMAX
- ProtectPoint for Recoverpoint

On Windows hosts, the NetWorker Server or NetWorker Storage Node installation automatically installs the NetWorker Extended Client package. The NetWorker Base Client installation does not install the NetWorker Extended Client package.

On UNIX hosts, install a separate NetWorker Extended Client package to enable additional feature support.

Avamar client

The NetWorker software installation package includes the Avamar client software.

The Avamar client software provides support only to NetWorker hosts that use an Avamar 7.3.1 and earlier system as a data protection target with a previous release of NetWorker. Install the Avamar client software only when you update a NetWorker host that previously used Avamar. The *EMC NetWorker Updating from a Previous Release Guide* provides more information.

NetWorker REST API

The NetWorker REST API is an interface that allows customer to access the NetWorker data protection service and to build client applications that automate NetWorker operations. The *EMC NetWorker REST API Getting Started Guide* describes how to use NetWorker REST API, and the *EMC NetWorker REST API Reference Guide* provides a full description of the API resources.

NMC client

A NetWorker Management Console (NMC) client is any host in the environment that uses a web browser and Java™ Runtime Environment (JRE) to display the NMC
Server GUI. Multiple users can access the NMC Server GUI simultaneously, from different browser sessions.

**NetWorker daemons**

The NetWorker software uses processes on Windows or daemons on UNIX to control and manage NetWorker operations in the datazone.

This table lists the NetWorker daemons for each software component.

**Table 5 Daemons on a NetWorker host**

<table>
<thead>
<tr>
<th>Software component</th>
<th>Daemons</th>
</tr>
</thead>
<tbody>
<tr>
<td>NetWorker Authentication Service</td>
<td>java.exe (Windows), jsvc.exec (UNIX)</td>
</tr>
<tr>
<td>NetWorker Server</td>
<td>nsrd, nsrexecd, nsrindexd, nsrmmdbd, nsrmmmd, nsrjobd, nsrmmgd, nsr1cpd, nsrlcgd, nsrsnmd, nsrmpd, nsrctld, nsrdiapd, nsrmmg, nsrcpd</td>
</tr>
<tr>
<td>NetWorker Client</td>
<td>nsrexecd</td>
</tr>
<tr>
<td>NetWorker Extended Client</td>
<td>nsrpsd</td>
</tr>
<tr>
<td>NetWorker Storage Node</td>
<td>nsrexecd, nsrmmmd, nsr1cpd, nsrsnmd</td>
</tr>
<tr>
<td>NetWorker Management Console server</td>
<td>gstd, httpd, postgres, gstsnmptrapd (optional)</td>
</tr>
</tbody>
</table>

For more information about the NetWorker processes, review the following information:

- The *nsrmmd* daemon or the *nsrmmd.exe* process is present on a NetWorker Server or storage node that has one or more enabled devices.
- The *nsrmmgd* daemon or the *nsrmmgd.exe* process is present on the NetWorker Server when a media manager is enabled.
- The *nsrlcpd* daemon or the *nsrlcpd.exe* process is present on a NetWorker Server and storage nodes when an attached tape library exists.
- The *nsrcpd* daemon or the *nsrcpd.exe* process is present on the NetWorker Server during a Package Manager software upgrade.

The NMC Server daemon, *gstd*, starts these additional processes:

- **postgres**: The PostgreSQL database daemon on Linux. On Windows, the service associated with the *postgres.exe* process is EMC GST Database Service.
- **httpd**: The web server daemon on Linux. On Windows, the service associated with the *httpd.exe* process is EMCGSTWebService. There are 2 or more httpd daemons.
- **gstsnmptrapd**: An optional daemon that is present on a Linux NMC Server when SNMP Trap monitoring is configured for a Data Domain system. On Windows, the service associated with *gstsnmptrapd.exe* process is *gstSnmpTrapd*. 

EMC Licensing Solution

NetWorker 9.0.x and later servers use the EMC Licensing Solution, an EMC standard for licensing in software products.

The EMC Licensing Solution uses an EMC License Server and reads a license file to determine which products are licensed and how much storage space to request for each datazone in the environment.

All installations of NetWorker use the EMC Licensing Solution. The chapter "EMC Licensing Solution" in the EMC NetWorker Licensing Guide provides information on how to implement the EMC Licensing Solution for new and upgraded installations of the NetWorker software. The "EMC Licensing Solution" chapter also describes the EMC License Server and the use of the license file.
Preparing to Update the NetWorker Software
CHAPTER 2

Software requirements

This section contains the following chapters:

- NetWorker server upgrades ................................................................. 22
- NMC server upgrades ....................................................................... 25
- Multi-locale datazone requirements .................................................. 27
- TCP/IP requirements ........................................................................ 29
- IPv6 protocol .................................................................................... 30
- NMC client requirements .................................................................. 31
NetWorker server upgrades

Review this section for information about changes to operating system support and changes to the NetWorker server functionality in that started with 9.0.x.

Changes in operating system support
NetWorker 9.1.x supports the installation of the NetWorker server and NMC server software on Windows x64 or Linux x64 only. You cannot update a pre-9.1.x AIX, HP-UX, or Solaris NetWorker server to NetWorker 9.1.x. Deploy a new NetWorker server on a supported Windows or Linux operating system. The *EMC NetWorker Installation Guide* provides the required steps to install the NetWorker software.

If you use an 8.1.x and 8.2.x NetWorker server on an operating system that NetWorker 9.1.x does not support, you have two options:

- Perform a cross platform migration of the NetWorker server data to NetWorker 9.1.x server on a supported Windows or Linux host. Contact EMC Professional Services for more information about cross platform migrations of the NetWorker server data.
- Install and configure the NetWorker 9.1.x server software on a supported Windows or Linux host and maintain the NetWorker 8.1.x and 8.2.x server for recovery purposes.

The *EMC NetWorker Online Software Compatibility Matrix* provides more information about the operating system versions that the NMC 9.1.x server software supports.

Changes to NetWorker server databases and resources
The NetWorker 9.1.x server uses a SQLite database to store information in the media database. When you update the NetWorker server software to 9.1.x from 8.1.x and 8.2.x, the upgrade process automatically converts the media database.

Improvements to the jobsdb were made in NetWorker 9.0 and NetWorker 9.1. In NetWorker 9.0, the format of the jobsdb changed from a SQLite database to a Postgres database. Previous versions of the jobsdb, including the 9.0.x version are not compatible with NetWorker 9.1. The update process does not migrate the jobsdb data. When you update from a previous release to NetWorker 9.1, the updating process renames the jobsdb and the NetWorker server uses a new database. After you update the NetWorker server, the following behavior is seen:

- When you update from NetWorker 8.x, you cannot view details about previously run groups. The NetWorker 9.1.x resources associated with these backup groups report a status of *never run*.
- When you update the NetWorker server from the 8.x or 9.0 versions:
  - Details about the policy, workflow, and action resources will report a status of *never run*.
  - Recovery resources created before the update appear as expired.
When you update the NetWorker server on a Windows or Linux host, to NetWorker 9.1.x, you cannot revert to NetWorker 8.1.x or 8.2.x without additional steps. Contact EMC Support for details about reverting to a previous version of the NetWorker server software. If EMC NetWorker Support attempts a rollback, EMC does not guarantee the recovery of data that was backed up while the NetWorker datazone was running the NetWorker 9.1.x software, but will provide a commercially reasonable effort attempt.

Changes to NetWorker backup method
NetWorker 9.x introduces a new backup method. Previous releases of NetWorker use group-based configurations to perform scheduled backup and clone operations. NetWorker 9.1.x uses policy-based configurations to perform schedule backup and clone operations. When you upgrade the NetWorker server, the upgrade process migrates resource configurations to new policy configurations. The Differences between NetWorker 9.1 and Previous Releases Technical Note on the EMC Online Support site at https://support.emc.com provides detailed information about the changes in method and resource configurations with NetWorker 9.1.x.

Changes in cloning save sets with backup levels 2–9
NetWorker 9.1.x does not support backup levels 2–9. Before you update the NetWorker server, clone all backup level 2–9 save sets, if required.

NetWorker Authentication Service
NetWorker 9.1.x uses the NetWorker Authentication Service to authenticate NetWorker Management Console (NMC) and command line interface (CLI) users.

To use a Linux NetWorker Server, install and configure the NetWorker Authentication Service package on the NetWorker Server host before you install NMC Server software. When you use a Windows NetWorker Server host, the NetWorker Server installation automatically installs the NetWorker Authentication Service software on the NetWorker Server host.

The NetWorker Authentication Service requires 64-bit Java 8. NetWorker supports the Oracle HotSpot and OpenJDK JRE vendors. Before you start the NetWorker Server installation, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any NetWorker Server daemons and set the JAVA_HOME environment variable.

Before you install the NetWorker Server software, ensure that an application does not exist on the NetWorker Server that uses an Apache Tomcat instance on port 9090. The NetWorker Authentication Service listens on port 9090 by default. The section "Troubleshooting NMC GUI and NetWorker Server connection issues" provides more information.

Note
If the installation does not detect 64-bit Java 8 on the host, the installation will not continue.

Java requirements for a NetWorker server
The installation for the NetWorker server software and the Linux configuration script for the NetWorker Authentication Service software check for the required Java version on a host. When the process or script does not detect the minimum required
Java version (64-bit Java 8u60) on the host, the installation cannot continue. NetWorker supports the Oracle HotSpot and OpenJDK JRE vendors. Before you start the NetWorker Server installation, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any NetWorker Server daemons and set the JAVA_HOME environment variable.

The following sections describe how to ensure that you are using the correct version of the Java software on a Windows or Linux NetWorker server.

### Determining the Java version on Windows

On Windows, the NetWorker server installation checks to ensure that 64-bit Java 8 is installed on the host. If the 64-bit Java 8 is not installed on the host, the NetWorker server installation cannot continue.

To determine which version of Java is installed on the host, perform the following steps.

**Procedure**

1. In **Control Panel**, select **Programs and Features**.
2. In the list of installed programs, find the Java program. When the host has the 64-bit version of Java installed, (64-bit) appears beside the Java version number. The following image provides an example of a host that has the 64-bit version of Java 8.

   ![Figure 1 Java version](example.png)

   **Figure 1 Java version**

<table>
<thead>
<tr>
<th>Name</th>
<th>Publisher</th>
<th>Date</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>NetWorker</td>
<td>EMC Corporation</td>
<td>02/03/2016</td>
<td>1.31 GB</td>
</tr>
<tr>
<td>Java 8 Update 61 (64-bit)</td>
<td>Oracle Corporation</td>
<td>16/02/2016</td>
<td>80.1 MB</td>
</tr>
</tbody>
</table>

3. If required, download the 64-bit version of Java from the Java website, and then install the Java software.

### Determining the Java version on Linux

On Linux, the NetWorker server software installation does not check to ensure that 64-bit Java 8 is installed on the host. After the installation completes, NetWorker daemons will not start correctly if Java is not installed on the host.

Use the `java` command to determine what Java version is on the Linux host.

**Procedure**

1. From a command prompt, type:

   ```
   java -version
   ```

   For example, when 64-bit JRE 8u45 is installed on the host, output similar to the following appears:

   ```
   java version "1.8.0_45"
   Java(TM) SE Runtime Environment (build 1.8.0_45-b14)
   Java HotSpot(TM) 64-Bit Server VM (build 25.45-b02, mixed mode)
   ```

2. If required, download the 64-bit version of Java from the Java website, and then install the Java software.
Set the JAVA_HOME environment variable to JRE 1.8

Before you install the NetWorker software, set the JAVA_HOME environment variable to the directory for the 64-bit JRE software.

Procedure
1. Log in to the target host with a user that has administrator privileges.
3. On the Advanced tab, click Environment Variables...
4. In the System Variables section, click New.
5. In the Variable name field, type JAVA_HOME.
6. In the Variable value field, type the path to the Java directory. For example, C:\Program Files\Java\jre1.8.0_xx
7. Click OK.
8. Click OK to close the Environment Variables window, and then click OK to close the System Properties window.

NMC server upgrades

Review this section for information about changes to operating system support and changes to the NMC server database in 9.1.x.

Updating the NMC server
An NMC 9.1.x server uses the NetWorker Authentication Service on a NetWorker 9.1.x server for authentication. Before you update the NMC server, update the NetWorker server. On a Linux NetWorker server, ensure that you configure the NetWorker Authentication Service and start the NetWorker services on the NetWorker server before you update the NMC server.

Changes in operating system support
NMC 9.1.x only supports Windows and Linux NMC servers. You cannot upgrade a pre-9.1.x AIX, HP-UX, or Solaris NMC server to NMC 9.1.x. Deploy a new NMC server on a supported Windows or Linux operating system. The EMC NetWorker Installation Guide provides the required steps to install the NetWorker software.

Note
The EMC NetWorker Online Software Compatibility Matrix provides more information about the operating system versions that the NMC 9.0.x server software supports.

Changes with the NMC database
The NMC 9.1.x server uses a PostgreSQL database to store NMC data. An 8.1.x and 8.2.x NMC server uses a Sybase database. As a result, after you update the NMC server software on a Windows or Linux host to version 9.1.x, you cannot directly roll back an NMC 9.1.x server to a previous version of the NMC server software.
**Note**

When you update the NetWorker server on a Windows or Linux host, to NetWorker 9.1.x, you cannot revert to NetWorker 8.1.x or 8.2.x without additional steps. Contact EMC Support for details about reverting to a previous version of the NetWorker server software. If EMC NetWorker Support attempts a rollback, EMC does not guarantee the recovery of data that was backed up while the NetWorker datazone was running the NetWorker 9.1.x software, but will provide a commercially reasonable effort attempt.

**Linux NMC server considerations**

The NetWorker software package provides a utility called **gstdbunload**, which converts the NMC data from a Sybase database format to a platform independent format, called an Unload Database. Before you update the NMC server software on Linux, convert the NMC database.

**HP-UX, Solaris, and AIX NMC server considerations**

NetWorker 9.0.x does not support an NMC server on the HP-UX, Solaris, and AIX operating systems.

The NetWorker software package provides a utility called **gstdbunload**, which converts the NMC data from a Sybase database format to a platform independent format, called an Unload Database. Use this utility to convert NMC data from a NetWorker 8.2.x and earlier AIX, HP-UX or Solaris server. Before you deploy a new NMC server in your datazone, use the **gstdbunload** to convert the NMC data on the AIX, HP-UX, or Solaris NMC server, and then copy the Unload Database to a location that is accessible to the new target Windows or Linux NMC server.

The chapter Updating NetWorker for UNIX from 8.2.x provides more information about how to use the **gstdbunload** command on AIX, HP-UX, and Solaris NMC servers.

**Windows NMC server considerations**

The updating process for Windows provides you with the ability to automatically convert the NMC database. When you update a supported Windows NMC server, EMC recommends that you allow the updating process to automatically convert the database. If your 8.1.x or 8.2.x NMC server is on a Windows operating system that NetWorker 9.1.x does not support, you must use the **gstdbunload** utility included with the NetWorker 9.1.x software package to convert the NMC database into a platform independent format. After you convert the database, you must copy the converted files to the Windows or Linux host that will become the new NMC server.

**NMC Server features and system requirements**

The NetWorker Management Console server (NMC Server) enables you to manage, monitor, and generate reports for multiple NetWorker Servers across multiple datazones and from a single host.

The NMC Server embeds the following software:

- Apache server, which downloads NMC jar files and starts the NMC Server daemons or services.
- PostgreSQL database, which stores reports and the NMC Server configuration information.
The NMC Server software package is supported on a Linux or Microsoft Windows host. The NMC Server software requires the NetWorker Client software.

You can install the NMC Server software on the NetWorker Server. The minimum system requirement for a NMC Server host is a 2 CPU processor and 8GB of RAM.

If NMC server is handling a large scale NetWorker server with a large number of users, then size the NMC server with 32 GB RAM and 8 core CPU, with greater than or equal to 1.5 GHz

It is recommended that you install the NMC Server software on a host that is not the NetWorker Server in the following scenarios:

- When the NMC Server manages a NetWorker Server with 50 or more clients.
- When the NMC Server monitors multiple datazones.

## Multi-locale datazone requirements

This section provides guidance for your multi-locale datazone NetWorker installation.

The NetWorker software enables you to configure hosts to run in different locales and supports a multi-locale datazone. The NetWorker software includes language pack support for French, Japanese, Simplified Chinese, Korean, and English locales.

The NetWorker command line interface (CLI), the NMC server graphical user interface (NMC GUI), and the NetWorker User program are I18N compliant.

In a multi-locale datazone, you can display data and remotely manage the NetWorker environment in the locale that is defined on the local host. NetWorker supports different locales on the local host, the NetWorker server, and the NMC server.

The NetWorker software supports:

- Languages and character sets that the underlying OS supports.
- UTF-8 encoded input and output files.
- Non-English scheduled backup and archive requests.
- Non-English mounts on UNIX hosts. The NetWorker software detects these mounts during an All save set backup.
- Directed recovery to a non-English relocation directory.
- Save set recovery of a non-English save set, independent of the locale of the source host.

The *EMC NetWorker Administration Guide* describes how to perform NetWorker tasks in a multi-locale datazone.

## General multi-locale considerations

Before you install the NetWorker software in a multi-locale datazone, consider how textual elements might display or what message files support localization.

To view localized textual elements in the CLI, the NMC server GUI, and the NetWorker User application:

- Install the required language font on the operating system of the host that is accessing the application interface.
- Enable the corresponding language locale on the operating system of the host that accesses the application interface.
- Enable the corresponding language locale on the NMC server.
• Install the corresponding language pack, which is included with the NetWorker software package, on the NetWorker Client, NetWorker Server, NetWorker Storage Node, and NMC Server.

**Note**

Textual elements include radio buttons, menu options, dates, times, and numbers.

The NetWorker software does not support locales that the operating system defines or code sets that remap characters that have a special meaning for file systems, for example De.DE.646. Depending on the file system, these special characters might include the forward slash (/), the backward slash (\), the colon (:), or the period (.)

When the non-English font is unavailable on the NMC client, the NMC GUI renders the localized textual elements in English or the elements might appear as illegible.

The CLI displays the data correctly when the current locale supports the characters and the encoding. However, when the user and system locales do not match on a Windows host, characters might display incorrectly.

The `nsr render log` command enables you to render English log file messages to the locale of the user that runs the command. The *EMC NetWorker Command Reference Guide* or the UNIX man pages describe how to use the *nsr render log* command.

Message files that support localization include:

• `daemon.raw` file—The main NetWorker log file.

• `nsrpcd.raw` file—The client push log.

• `gstd.raw` file—The NMC server log file.

• `networkr.raw` file—The Windows recovery log file.

The *EMC NetWorker Administration Guide* describes how to view raw log files.

**Windows requirements for multiple locales**

Before you install the NetWorker software on a Windows host in a multi-locale NetWorker datazone, review the following general locale requirements.

• When non-UTF8 data from a UNIX host uses encoding that Windows does not support natively, for example, euc-jp, the data from the UNIX host does not appear correctly in the NMC GUI on the Windows host.

• The *NetWorker User* program displays textual elements, dates, times, and numbers that are based on the *Regional and Language Options* settings in the Control Panel.

• For the French locale and other Latin 1 languages, the NetWorker application uses code page 1252. If the code page for a Windows terminal session is not 1252, CLI commands might not work correctly. For example, when a code page mismatch occurs between the terminal console and the `recover` command, NetWorker cannot mark or add some files when using `recover` command. An error message similar to the following appears: `<filename> not in index`. To resolve this issue, type `chcp=1252` at the Windows command prompt, then type the `recover` command.
UNIX requirements for multiple locales

Before you use a UNIX host to connect to the NMC server in a multi-locale NetWorker datazone, review the following information, which describes how to use non-ASCII installation directories and how to display non-textual elements.

- NetWorker does not support a non-ASCII installation directory. Create a symbolic link between the /nsr folder to a non-ASCII directory.

- To display non-English textual elements, the dates, the times, and the numbers in the NMC GUI, ensure that you:
  - Install the NetWorker language package on the client.
  - Define the LC_ALL and LANG environment variables from a console window, to match the installed NetWorker language pack. For example, on a Solaris host:
    - To use the French NetWorker language pack, type:
      ```
      setenv LANG fr
      setenv LC_ALL fr
      ```
    - To use the Japanese NetWorker language pack, type:
      ```
      setenv LANG ja
      setenv LC_ALL ja
      ```
    - To use the Simplified Chinese NetWorker language pack, type:
      ```
      setenv LANG zh
      setenv LC_ALL zh
      ```
    - To use the Korean NetWorker language pack, type:
      ```
      setenv LANG ko
      setenv LC_ALL ko
      ```

TCP/IP requirements

The NetWorker software requires that you install and configure TCP/IP on each host. Before you install the NetWorker software, ensure that the configuration meets the following requirements:

- The /etc/hosts file on each Solaris and Linux NetWorker host must contain an entry for the IPv4 loopback address. For example, on Linux the /etc/hosts file contains the following entries by default:
  ```
  127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
  ```

  **Note**

  NetWorker does not require changes to the hosts file on Windows hosts. It is recommended that you use the default hosts file settings for the IPv4 loopback address on Windows hosts.

- The NetWorker server, when configured as a DHCP client, must use a reserved address that is synchronized with DNS.
The name of the host that the `hostname` command returns on the system must match the name that the IP address resolves to when using the `nslookup` command.

OS tools, for example, the `nslookup` command, must resolve the IP address of the host to the same hostname that you defined for the NIC that NetWorker uses.

The hostname must not contain an underscore character (_).

Note

On a Linux NetWorker Server, the NetWorker daemons cannot start when the IP address 127.0.0.1 is inaccessible on the loopback interface. This requirement is true even in an IPv6-only environment.

IPv6 protocol

Internet Protocol version 6 (IPv6) is a next generation Internet protocol that is used concurrently with IPv4 or in a pure IPv6 environment. IPv6 increases the number of available IP addresses and adds improvements to routing and network autoconfiguration.

Consider the following information about IPv6 that is relevant to a NetWorker datazone:

- The OS displays IPv6 addresses as eight groups of 16-bit hexadecimal values that are separated by colons (:).
  For example: `2001:0db8:85a3:0000:0000:8a2e:0370:7334`
- Most newer operating systems configure the IPv6 loopback interface by default. To determine if the IPv6 loopback interface is configured on the host, use the `ifconfig` command on UNIX and the `ipconfig` command on Windows.

Note

On UNIX systems, the device name of the loopback interface is usually `lo` or `lo0`.

- NetWorker does not support temporary or link-local IPv6 addresses.
- The client backup fails when the client IPv6 address is not stored in DNS or in the hosts file, or when the address is not added to the client resource. When the operating system configures the IPv6 loopback interface, ensure that the following requirements are met:
  - The `hosts` file on each NetWorker host must have an entry that associates the IPv6 loopback interface (::1) with the localhost. Add the IPv6 loopback interface entry before the IPv4 loopback entry (127.0.0.1 localhost)
    For example:

    ```
    ::1 localhost
    127.0.0.1 localhost localhost.localdomain
    ```
  - The IPv6 loopback entry must remain in the `hosts` file when the host is operating in a pure IPv4, pure IPv6, or dual stack configuration.
NMC client requirements

An NMC client is any host in the datazone in which you use a web browser to connect to the NMC GUI to manage the NMC server and NetWorker servers.

The following table summarizes the supported Java (JRE) versions and browsers for each supported NMC client operating system.

Table 6 Supported NMC clients and JRE versions

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Supported JRE and browsers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux x86 (32-bit) RHEL 6, 7 SLES 11, 12</td>
<td>• JRE 1.8.x</td>
</tr>
<tr>
<td></td>
<td>• Mozilla Firefox</td>
</tr>
<tr>
<td>Linux em64T &amp; AMD64 (64-bit), RHEL 6, 7, SLES 11, 12</td>
<td>• JRE 1.8.x</td>
</tr>
<tr>
<td></td>
<td>• Mozilla Firefox</td>
</tr>
<tr>
<td>Mac OS X 10.7, 10.8, 10.9, 10.10, 10.11, 10.12</td>
<td>• Firefox</td>
</tr>
<tr>
<td>Solaris 10, 11, 12 for Solaris SPARC, Solaris Opteron (64-bit)</td>
<td>• JRE 1.8.x</td>
</tr>
<tr>
<td></td>
<td>• Mozilla Firefox</td>
</tr>
<tr>
<td>Windows 7, Windows 2008, Windows 2008 R2 for x86, em64T &amp; AMD64 (64-bit)</td>
<td>• JRE 1.8.x</td>
</tr>
<tr>
<td></td>
<td>• Microsoft Internet Explorer 7</td>
</tr>
<tr>
<td></td>
<td>• Mozilla Firefox</td>
</tr>
<tr>
<td></td>
<td>• Firefox</td>
</tr>
<tr>
<td></td>
<td>• Microsoft Internet Explorer 10 in Desktop mode only</td>
</tr>
</tbody>
</table>

Adding the NMC server to Exception Site list

Java security settings block the NMC server application.

Therefore, you must add the NMC server address to the JRE Exception site list.

Procedure

1. Open the Java Control Panel.
2. On the Security tab, select Edit Site list.
3. Click Add.
4. In the Location field, specify the URL to the NMC server in the format http://server_name:9000
   where server_name is the hostname of the NMC server.
Note

If you connect to the NMC server by using the IP address of the NMC server, add an entry for the IP address in the following format:

http://ip_address:9000

5. Click OK.
6. In the Security Warning window, click Continue.
7. Click OK.
PART 2

Updating the NetWorker software

The updating procedures for the supported NetWorker operating systems are unique. Refer to the appropriate operating systems chapters to update the NetWorker software.

This section contains the following chapters:

Chapter 3, "Updating NetWorker for Linux"
Chapter 4, "Updating NetWorker for Windows"
Chapter 5, "Updating NetWorker for UNIX"
Chapter 6, "Updating NetWorker for OS-X"
Updating the NetWorker software
CHAPTER 3

Updating NetWorker for Linux

This chapter includes the following topics:

- Roadmap for updating NetWorker software on Linux.................................36
- Updating NetWorker on Redflag Asianux, CentOS, OEL, RHEL, and SuSE from NetWorker 9.0.x........................................................................................................36
- Updating NetWorker on RedFlag Asianux, CentOS, OEL, RHEL, and SuSE from NetWorker 8.1.x or 8.2.x.............................................................................46
- Updating the NetWorker client software on Debian and Ubuntu..................60
- Updating the NetWorker client software on Fedora.......................................63
Roadmap for updating NetWorker software on Linux

Use the following procedures to update and configure the NetWorker and NMC software. If the NetWorker server and the NMC server are on different hosts, update NetWorker on the NetWorker server host before the NMC server host.

Depending on the distribution of the Linux OS that you are updating the NetWorker software from, select and follow the procedures outlined in one the following scenarios:

- To update the NetWorker software from 9.0.x on Redflag Asianux, CentOS, OEL, RHEL and SuSe, review Updating from NetWorker 9.0.x on Asianux, CentOS, OEL, RHEL, and SuSE
- To update the NetWorker software from 8.1.x and 8.2.x on Redflag Asianux, CentOS, OEL, RHEL and SuSe, review Updating from NetWorker 8.2.x RedFlag Asianux, CentOS, OEL, RHEL, and SuSE
- Updating the NetWorker client software on Debian and Ubuntu
- Updating the NetWorker client software on Fedora

**NOTICE**

Some Linux operating systems allow you to update the NetWorker software without removing the previous version.

Updating NetWorker on Redflag Asianux, CentOS, OEL, RHEL, and SuSE from NetWorker 9.0.x

Use the following procedures to update the NetWorker and NMC server software from version 9.0.x.

Preparing the Linux host for a NetWorker software or NMC server software update

Before you update the NetWorker software or NMC server software on Linux, review the following information.

Preparing the NetWorker server

Before you update the NetWorker server, ensure that the media database and client file indexes are in a consistent state, and that you have a backup of the databases.

**Procedure**

1. Connect to the NetWorker server as root on UNIX and administrator on Windows, and then open a command prompt.
2. Put the NetWorker databases in a consistent state:
   
   nsrim -X
   nsrck -m
   nsrck -L6

3. Record the current location of the NetWorker media database:

   nsrls -m
4. Record the current location of the NetWorker client file indexes:
   
   `nsrls`

5. Record the range of ports the NetWorker software uses:
   
   `nsrports`

6. Perform a server backup by starting the Server backup workflow.
   
   Ensure that the media pool associated with the backup action has appendable media available.

7. Record the latest bootstrap save set ID (ssid) including the file number, the record number, and the associated volume label.
   
   For example:
   
   ```
   mminfo -B
   
   date time level ssid file record volume
   10/11/11 16:29:40 full 4254377781 0 0 bootstrap_vol.001
   
   In this example:
   
   • The save set ID (ssid) is 4254377781.
   • The file number is 0.
   • The record number is 0.
   • The label of the volume that contains the bootstrap save set is bootstrap_vol.001.
   ```

SuSE package requirements

The NetWorker software has OS package dependencies. The default SuSE installation does not contain all the operating system packages that the NetWorker software requires.

When you use the `rpm` command to install the NetWorker software, the installation displays a list of missing required OS packages. You must install the required packages before you install the NetWorker software.

For example, when you run the `rpm` command to install the NetWorker software on a default installation, output similar to the following might appear:

```
rpm -ivh lgtocln-9.1-0.x86_64.rpm
error: Failed dependencies:
libcap.so.1()(64bit) is needed by lgtocln-9.1-0.x86_64
libstdc++.so.5()(64bit) is needed by lgtocln-9.1-0.x86_64
libstdc++.so.5(CXXABI_1.2)(64bit) is needed by lgtocln-9.1-0.x86_64
libstdc++.so.5(GLIBCXX_3.2)(64bit) is needed by lgtocln-9.1-0.x86_64
libstdc++.so.5(GLIBCXX_3.2.2)(64bit) is needed by lgtocln-9.1-0.x86_64

To resolve this issue, install the following OS packages, and then run the `rpm` command again:
```
RHEL 7 and CentOS package requirements

The NetWorker installation requires some packages that the default OS installation might not include.

Manually download and install the following Linux OS packages. The NetWorker installation fails when these packages do not exist on the host:

- ksh
- glibc.i686 0:2.17-55.el7 or later
- nss-softokn-freebl.i686 0:3.15.4-2.el7 or later

Note

For PowerPC (PPC) hosts, install the 32-bit Pluggable Authentication Modules (PAM) library, pam-1.1.8-12.el7_1.1.ppc or later, on the host. NetWorker requires the 32-bit package, even when the 64-bit PAM package exists on the host.

Updating the NetWorker software

You can use the `rpm -U` command to update the NetWorker client, server, and storage node software without first removing the previous version of the software.

Before you begin

Before you remove the NetWorker software, remove the NetWorker module software. The NetWorker module software includes the NetWorker Module for Database Applications software. The appropriate module installation guide describes how to uninstall the module software.

Before you start the NetWorker Server update, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any running NetWorker Server daemons.

Procedure

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   Ensure that there is sufficient disk space on the host. The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Package name</th>
<th>Compressed file size</th>
<th>Uncompressed file size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux s390x</td>
<td>nw91_linuxs390x.tar.gz</td>
<td>104 MB</td>
<td>107 MB</td>
</tr>
<tr>
<td>Linux IBM PowerPC</td>
<td>nw91_linux_ppc64.tar.gz</td>
<td>26 MB</td>
<td>26 MB</td>
</tr>
<tr>
<td>Linux x86</td>
<td>nw91_linux_x86.tar.gz</td>
<td>299 MB</td>
<td>306 MB</td>
</tr>
<tr>
<td>Linux x86-64</td>
<td>nw91_linux_x86_64.tar.gz</td>
<td>1.23 GB</td>
<td>1.26 GB</td>
</tr>
</tbody>
</table>
2. Change to the temporary location that contains the software package, and then unzip and extract the files by typing the `tar` command.

   For example:

   ```
tar -xzf file_name.tar.gz
   ```

3. Use the `rpm -qa | grep lgto` command to display the list of installed NetWorker packages.

4. From the directory that contains the latest version of extracted NetWorker software packages, type:

   ```
   rpm -Uvh package [package]...
   ```

   where:

   - `package [package]...` is a list of the software package for the installation type.

   **Note**

   The Block-Based Backup (BBB) package requires a different command. Do not include the package in the update command.

   - You specify optional packages such as language packs and man pages in `rpm` command after the required packages for the installation type.

   - You can use the `rpm -U` command to install new NetWorker package, for example the Extended Client software and the NetWorker Authentication Service software.

   This table provides a list of the software packages that you are required to specify for each installation type.

**Table 8** List of software packages for each installation type

<table>
<thead>
<tr>
<th>Installation type</th>
<th>Packages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client software and Extended Client software</td>
<td>lgtoclnt*.rpm lgtoxtdclnt*.rpm lgtoicm*.rpm</td>
</tr>
<tr>
<td></td>
<td>The lgtoicm*.rpm is optional and installs the EMC NetWorker License Manager software.</td>
</tr>
<tr>
<td>Storage Node software</td>
<td>lgtoclnt*.rpm lgtoxtdclnt*.rpm lgtonode*.rpm</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong></td>
</tr>
<tr>
<td></td>
<td>The lgtoadpt package is required when NMM clients exist in the datazone.</td>
</tr>
<tr>
<td>Block-Based Backup software</td>
<td>lgtoclnt*.rpm lgtobbb*.rpm</td>
</tr>
</tbody>
</table>
Table 8 List of software packages for each installation type (continued)

<table>
<thead>
<tr>
<th>Installation type</th>
<th>Packages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note</td>
<td>Before you install the BBB software, ensure that you install the OS lsb package. On RHEL, install the lsb package. On SUSE, install the lsb-release package.</td>
</tr>
<tr>
<td>Avamar client software</td>
<td>AvamarClient-linux*.rpm</td>
</tr>
<tr>
<td>Note</td>
<td>Install this package only when updating NetWorker 9.0.x and earlier hosts that use Avamar as a data protection target.</td>
</tr>
<tr>
<td>Man pages</td>
<td>lgtoman*.rpm</td>
</tr>
<tr>
<td>Simplified Chinese language support</td>
<td>lgtozh*.rpm</td>
</tr>
<tr>
<td>French language support</td>
<td>lgtofr*.rpm</td>
</tr>
<tr>
<td>Japanese language support</td>
<td>lgtoja*.rpm</td>
</tr>
<tr>
<td>Korean language support</td>
<td>lgtoko*.rpm</td>
</tr>
</tbody>
</table>

5. (Optional) Update the BBB package, by typing the following command from the directory that contains the extracted packages:

```
rpm -Uvh --noperm lgtobbb*.rpm
```

6. For a NetWorker server only, configure the NetWorker Authentication Service:

   a. To start the NetWorker Authentication Service configuration script, type opt/nsr/authc-server/scripts/authc_configure.sh.

   b. At the Specify the directory where the Java Standard Edition Runtime Environment software is installed prompt, Press Enter to accept the default location, /usr/java/latest.

   c. The configuration process uses port 9090 for communication. If the configuration process detects that the port is in use, a warning similar to the following appears: Warning: Port 9090 is already in use.

   Perform the following steps to specify a different port.

   a. At the Do you wish to specify a different port number prompt, press Enter to accept the default response, Yes.

   b. At the Specify the port that Apache Tomcat should use for communication? prompt, specify the port number.

   Note

   Valid port numbers are between 1024 and 49151. If the configuration process detects that the port that you specified is in use, a prompt asks if you want to select a different port number.
7. At the Do you want to use the existing keystore /nsr/authc/conf/authc.keystore [y]? prompt, press Enter.
8. At the Specify password for the existing keystore prompt, type the keystore password.
9. (Optional) If the password for the Java Common Truststore on the host is not the default password changeit, then the Specify the password for the Java Common Truststore at /usr/java/latest/jre/lib/security/cacerts prompt appears. Type the Java Common Truststore password.
10. At the Confirm the password prompt, type the password for the administrator account.
11. Start the NetWorker daemons: /etc/init.d/networker start
12. Confirm that the NetWorker daemons have started, by typing the following command:

    /etc/init.d/networker status

For a NetWorker server, the nsrctld daemon starts. The nsrctld daemon starts other processes that the NetWorker server requires. Output similar to the following appears when the daemons are started:

```
+--o nsrctld (29021)
  +--o epmd (29029)
  +--o rabbitmq-server (29034)
    +--o beam (29038)
      +--o inet_gethost (29144)
        +--o inet_gethost (29145)
  +--o jsvc (29108)
    +--o jsvc (29114)
  +--o nsrd (29123)
    +--o java (29135)
      +--o nsrmmdbd (29828)
      +--o nsrindexd (29842)
      +--o nsrdispd (29853)
      +--o nsrjobd (29860)
      +--o nsrvmwsd (29968)
    +--o connectemc (29131)
  +--o eventservice.ru (29154)
    +--o jsvc (29158)
      +--o jsvc (29159)
  +--o java (29838)
    +--o node-linux-x64- (29885)
    +--o nsreexecd (29004)
  +--o nsrlogd (29899)
  +--o nsrsnmmd (30038)
```

If you do not see this output, type /etc/init.d/networker start

13. For NetWorker Server installations only, install and configure the EMC Licensing Solution. The EMC NetWorker Licensing Guide provides more information.

After you finish

Recreate the symbolic links for the authc_config and authc_mgmt script files to the /usr/sbin directory, by typing the following commands:

```
ln -s /opt/nsr/authc-server/bin/authc_config /usr/sbin/authc_config
ln -s /opt/nsr/authc-server/bin/authc_mgmt /usr/sbin/authc_mgmt
```
Updating the NMC server

The NMC server uses the NetWorker Authentication Service on the NetWorker server for user access and user management. Before you update the NMC server, ensure that you update the NetWorker server software and start the NetWorker daemons on the NetWorker server.

NMC server requirements

The following table provides a list of the default file locations.

<table>
<thead>
<tr>
<th>NetWorker package</th>
<th>Location</th>
<th>Space for Linux x86</th>
<th>Space for Linux em64T and AMD64</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMC server (LGTONmc)</td>
<td>/opt/lgtonmc</td>
<td>167 MB</td>
<td>167 MB</td>
</tr>
</tbody>
</table>

The NMC server software supports the following operating systems:

- Redflag Asianux Server 3
- RHEL 5, 6, and 7 (64-bit)
- SuSE 10, 11, and 12 (64-bit)
- CentOS 5, 6, and 7 (64-bit)
- OEL 5.8, 6.5, and 7 (64-bit)

Note

You might require UTF-8 converters for the operating system.

The *EMC NetWorker Online Software Compatibility Matrix* provides the latest information on supported NMC server operating systems.

Updating the NMC server software

Use the `rpm -U` command to update the NMC server software without first removing the previous version of the software.

Before you begin

Perform a NMC server backup, by starting the NMC server backup workflow.

Note

Ensure that the media pool associated with the backup action has appendable media available.

Procedure

1. Use the `rpm -qa | grep lgto` command to display the list of installed NetWorker packages.
2. From the directory that contains the latest version of extracted NetWorker software packages, type:

   `rpm -Uvh lgtoclnt-*.*rpm lgtonmc*.rpm package [package]...`
where package [package]... is a list of NetWorker 8.1.x or 8.2.x optional software packages or additional NetWorker 9.1 packages.

For example:

- To update the NMC server, and install the optional man pages and install the Extended Client software, type:
  
rpm -Uvh lgtoclnt-*.rpm lgtonmc*.rpm lgtonman*.rpm
  lgtotclnt*.rpm

- To update an NMC server that is also the NetWorker server, type:
  
rpm -Uvh lgtoclnt-*.rpm lgtonode*.rpm lgtoxtclnt*.rpm
  lgtoauthc*.rpm lgtoserv*.rpm lgtonmc*.rpm lgtonman*.rpm

**Note**

A message similar to the following might appear during the update process:

> lgto_gst" deleted from file /root/.odbc.ini

This is expected behavior and an informational message only.

3. When the NMC server is also the NetWorker server, perform the following steps configure the NetWorker Authentication Service:

   a. To start the NetWorker Authentication Service configuration script, type:
      
      /opt/nsr/authc-server/scripts/authc_configure.sh
   
   b. At the **Specify the directory where the Java Standard Edition Runtime Environment software is installed** prompt, Press Enter to accept the default location, /usr/java/latest.

   c. At the **Specify the keystore password** prompt, type the keystore password.

   d. At the **Confirm the password** prompt, type the keystore password.

   e. At the **Confirm the password** prompt, type the password for the administrator account.

4. Start the NetWorker daemon on the Linux host:
   
   /etc/init.d/networker start

---

**Configuring the NMC server**

Perform the following steps after you install the NMC server software.

**Before you begin**

Before you start the NMC configuration script, ensure that the nsreexecd daemon is running on the NMC host and the NetWorker daemons are running on the NetWorker Server. Use the /etc/init.d/networker status command to confirm that the daemons are started. If required, use the /etc/init.d/networker start command to start the NetWorker daemons. The configuration requires communication with processes on the NetWorker Server. When the NMC Server is not the NetWorker Server, ensure that the NMC Server can communicate with the NetWorker Server.

**Procedure**

1. Start the configuration script, by typing the following command:
   
   /opt/lgtonmc/bin/nmc_config
2. If the NetWorker services are not started on the NMC Server, the NetWorker services are not running on this host. Do you want to start them now? The prompt appears. To start the NetWorker services, press Enter.

3. From the Specify the directory to use for the NMC database prompt, specify a path or press Enter to accept the default path /nsr/ncmc/nmcdb.

4. From the Specify the host name of the NetWorker Authentication Service host prompt, specify the name of the NetWorker Server that you want to use for NMC and NetWorker Server user authentication.

   **Note**
   If the configuration script does not detect the NetWorker Authentication Service on the host that you specified, or the authentication service does not use the default port 9090, a warning message appears. The configuration script prompts you to specify a different authentication server host. Type y and when prompted, type the hostname and port of the NetWorker Authentication Service host.

5. When prompted to start the NMC Server daemons, type y.

6. Confirm that the NMC server daemons have started, by typing the following command: ps -ef | grep lgtonmc.

   Output similar to the following appears when the daemons have started:

   ```
   root 3064 1 0 10:03 ? 00:00:01 /opt/lgtonmc/bin/gstd
   dbuser 3329 1 0 10:04 ? 00:00:00 /opt/lgtonmc/
   postgres/bin/postgres -D /opt/lgtonmc/nmcdb/pgdata
   root 3969 1 0 10:04 ? 00:00:00 /opt/lgtonmc/apache/bin/
   httpd -f /opt/lgtonmc/apache/conf/httpd.conf
   nobody 3970 3969 0 10:04 ? 00:00:00 /opt/lgtonmc/
   apache/bin/httpd -f /opt/lgtonmc/apache/conf/httpd.conf
   ```

**Troubleshooting NMC installation and configuration issues**

This section describes how to troubleshoot and resolve common NMC installation and configuration issues.

**ERROR: Command /opt/lgtonmc/bin/gstdbinit -U postgres -n 5432 /nsr/ncmc/nmcdb failed**

This message appears when the nmc_config command is initializing the NMC server database.

Error messages similar to the following appear in the /nsr/ncmc/nmcdb/pgdata/db_output.log file:

```plaintext
Auto configuration failed 6729: error:0200100D:system library:fopen:Permission denied:
libbss_file.c:126:fopen('/space/tpkgs/openssl/098zc/install/openssl1.cnf','rb')
libbss_file.c:131: 6729: error:0E078002: configuration file routines:DEF_LOAD:system
lib:conf_def.c:199:
```
Error messages similar to the following appear in the /opt/lgtonmc/logs/install.log file:

waiting for server to start........ stopped waiting pg_ctl

Examine the log output. 107558:gstdbinit: The binary '/opt/lgtonmc/postgres/bin/pg_ctl' did not launch or complete successfully

When you manually run the command /opt/lgtonmc/bin/gstdbinit -U postgres -n 5432 /nsr/nmc/nmcdb, the following error appears: /opt/lgtonmc/bin/gstdbinit: error while loading shared libraries: libltdl.so.3: cannot open shared object file: No such file or directory

This issue appears when the LD_LIBRARY_PATH variable is not correctly set.

To resolve this issue, perform the following steps:

1. Determine the NMC installation path, by default the NMC installation path is /opt/lgtonmc.

2. Add the NMC odbc directory to the LD_LIBARARY_PATH variable. For example, when the NMC installation path is the default location, type the following command:

   export LD_LIBRARY_PATH=/opt/lgtonmc/postgres/odbc

3. Initialize the NMC database, by typing the following command:

   NMC_installation_path/bin/gstdbinit -U postgres -n 5432
   NMC_installation_path/nmcdbXX

   where: NMC_installation_path is /opt/lgtonmc by default and XX is a number that you specify to create a new subdirectory.

   For example, if the NMC server uses the default location and the /opt/lgtonmc/nmcdb1 directory exists, type the following command:

   /opt/lgtonmc/bin/gstdbinit -U postgres -n 5432 /opt/lgtonmc/nmcdb2

4. Start the NMC database, by typing the following command:

   NMC_installation_path/postgres/bin/pg_ctl -D NMC_installation_path/nmcdbXX/pgdata -l logfile start

   where: NMC_installation_path is /opt/lgtonmc by default and nmcdbXX is the subdirectory that you created in the previous step.

   For example, if the NMC server uses the default location and the nmcdb directory nmcdb2, type:

   /opt/lgtonmc/postgres/bin/pg_ctl -D /opt/lgtonmc/nmcdb2/pgdata -l logfile start
Updating NetWorker on RedFlag Asianux, CentOS, OEL, RHEL, and SuSE from NetWorker 8.1.x or 8.2.x

Use the following procedures to update the NetWorker and NMC server software from version 8.1.x or 8.2.x.

Preparing the Linux host for a NetWorker software or NMC server software update

Before you update the NetWorker software or NMC server software on Linux, review the following information.

Preparing the NetWorker server

Before you update the NetWorker server, ensure that the media database and client file indexes are in a consistent state and that you have a backup of the databases.

To prepare the NetWorker server, perform these steps from a command prompt on the NetWorker server as root on UNIX or administrator on Windows.

Procedure

1. Put the NetWorker databases in a consistent state:
   
   nsrim -X
   nsrck -m
   nsrck -L6

2. Record the current location of the NetWorker client file indexes:

   nsrls

3. Record the range of ports the NetWorker software uses:

   nsrports

4. Perform a backup of the bootstrap, the client file indexes, and the resource database, type savegrp -O group_name

   where group_name is the name of a group that contains all the NetWorker clients in the datazone. If a group that contains all the clients does not exist, run multiple savegrp commands, specifying a different group each time. This will ensure that you back up the clients indexes for each client in the datazone.

   Note

   Ensure the media pool associated with the group has appendable media available.

5. Record the latest bootstrap save set ID (ssid) including the file number, the record number, and the associated volume label.

   For example:

   mminfo -B
In this example:
- The save set ID (ssid) is 4254377781.
- The file number is 0.
- The record number is 0.
- The label of the volume that contains the bootstrap save set is bootstrap_vol.001.

NetWorker server only, back up the LDAP or AD configuration

If the NetWorker datazone uses LDAP or AD to authenticate access to the NetWorker server and NMC server, create a copy of the configuration file, /opt/nsr/cst/Config.xml.

SuSE package requirements

The NetWorker software has OS package dependencies. The default SuSE installation does not contain all the operating system packages that the NetWorker software requires.

When you use the rpm command to install the NetWorker software, the installation displays a list of missing required OS packages. You must install the required packages before you install the NetWorker software.

For example, when you run the rpm command to install the NetWorker software on a default installation, output similar to the following might appear:

```
rpm -ivh lgtoclnt-9.1-0.x86_64.rpm
error: Failed dependencies:
  libcap.so.1()(64bit) is needed by lgtoclnt-9.1-0.x86_64
  libstdc++.so.5()(64bit) is needed by lgtoclnt-9.1-0.x86_64
  libstdc++.so.5(CXXABI_1.2)(64bit) is needed by lgtoclnt-9.1-0.x86_64
  libstdc++.so.5(GLIBCXX_3.2)(64bit) is needed by lgtoclnt-9.1-0.x86_64
  libstdc++.so.5(GLIBCXX_3.2.2)(64bit) is needed by lgtoclnt-9.1-0.x86_64
```

To resolve this issue, install the following OS packages, and then run the rpm command again:
- compat-libstdc++-33-3.2.3-68.1.x86_64.rpm
- libcap1-1.10-47.1.x86_64.rpm

RHEL 7 and CentOS package requirements

The NetWorker installation requires some packages that the default OS installation might not include.

Manually download and install the following Linux OS packages. The NetWorker installation fails when these packages do not exist on the host:
- ksh
- glibc.i686 0:2.17-55.el7 or later
Preparing the NMC server

Before you update the NMC server software from an 8.1.x or 8.2.x release, perform a manual backup of the NMC server database, and then convert the NMC database.

Performing a manual backup of the NMC database

Perform the following steps to back up the NMC database.

Procedure

1. Set the `LD_LIBRARY_PATH` environment variable to `NMC_install_dir/ lgonmc/bin:NMC_install_dir/sybasa/lib`.

   The default NMC installation directory is `/opt/lgtonmc`

2. Use the `savepsm` command to perform the backup.

   `savepsm -I "NMC_install_dir" -b pool_name`  

   where `NMC_install_dir` is the NMC server installation directory.

Note

If the installation directory path contains spaces, then enclose the path in quotations.

The *EMC NetWorker Command Reference Guide* or the UNIX man pages provides information about the `savepsm` command.

Preparing the NMC database

The NMC database in 9.1.x is a Postgres database. NetWorker server 8.2.x and earlier uses a Sybase database.

Perform the following steps to convert the Sybase database into an Unload Database. The upgrade process will prompt you for the location of the converted files, and then import the Unload Database into a Postgres database.

Note

To update the NMC server without converting the database, use the `touch` command to create the `/opt/lgtonmc/logs/dbunloaded.tag` file.

Procedure

1. Stop the NetWorker and NMC daemons, by typing the following command:

   `/etc/init.d/networker stop`

   `/etc/init.d/gst stop`
2. Copy the `gstdbunload` file from the directory to which you extracted the NetWorker 9.1.x software, into the `installation_path/bin` folder on the NMC server. By default, the `installation_path` is in the following location:

- AIX, HP-UX, and Linux: `/opt/lgtonmc`
- Solaris: `/opt/LGTONMC`

3. Create a directory that will contain the Unload Database files. Specify a location that has sufficient disk space to store the converted database. To store the Unload Database files, the conversion process requires free disk space equal to 1.5 times the size of the original database.

   **Note**
   The update process creates a new user for the Postgres database, and uses this new user to read the contents of the directory that contains the Unload Database. Ensure that everyone has execute level permissions to the directory and the directory contents.

4. From a command prompt, in the `installation_path/bin` folder, type the following command:

   ```
   ./gstdbunload
   target_conversion_dir
   ```

   where `target_conversion_dir` is the directory that you created in the previous step.

   **Note**
   If the NMC daemons are running the database conversion process fails with an error messages similar to the following:

   SQL error: Unable to start specified database:

   To resolve this issue, stop the NMC daemons and run the `gstdbunload` command again.

   The status of the conversion appears in stdout and in the `target_conversion_dir/reload.log` file.

5. For pre-9.1.x Solaris, HP-UX, and AIX NMC servers only, copy the `target_conversion_dir` to the target Windows or Linux NMC server.

### Updating the NetWorker software

You can use the `rpm -U` command to update the NetWorker client, server, and storage node software without first removing the previous version of the software.

**Before you begin**

Before you remove the NetWorker software, remove the NetWorker module software. The NetWorker module software includes the NetWorker Module for Database...
Applications software. The appropriate module installation guide describes how to uninstall the module software.

Before you start the NetWorker Server update, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any running NetWorker Server daemons.

**Note**

If the NetWorker server is also the NMC server, use the procedure described in *Updating the NMC server* on page 42 to update the NetWorker server.

**Procedure**

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   Ensure that there is sufficient disk space on the host. The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

   **Table 10** Size of compressed and uncompressed files

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Package name</th>
<th>Compressed file size</th>
<th>Uncompressed file size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux s390x</td>
<td>nw91_linuxs390x.tar.gz</td>
<td>104 MB</td>
<td>107 MB</td>
</tr>
<tr>
<td>Linux IBM PowerPC</td>
<td>nw91_linux_ppc64.tar.gz</td>
<td>26 MB</td>
<td>26 MB</td>
</tr>
<tr>
<td>Linux x86</td>
<td>nw91_linux_x86.tar.gz</td>
<td>299 MB</td>
<td>306 MB</td>
</tr>
<tr>
<td>Linux x86-64</td>
<td>nw91_linux_x86_64.tar.gz</td>
<td>1.23 GB</td>
<td>1.26 GB</td>
</tr>
</tbody>
</table>

2. Change to the temporary location that contains the software package, and then unzip and extract the files by typing the `tar` command.

   For example:

   ```
   tar -xzf file_name.tar.gz
   ```

3. Use the `rpm -qa | grep lgto` command to display the list of installed NetWorker packages.

4. From the directory that contains the latest version of extracted NetWorker software packages, type:

   ```
   rpm -Uvh package [package]...
   ```

   where:

   - `package [package]...` is a list of the software package for the installation type.

   **Note**

   The Block-Based Backup (BBB) package requires a different command. Do not include the package in the update command.

   - You specify optional packages such as language packs and man pages in `rpm` command after the required packages for the installation type.
You can use the `rpm -U` command to install new NetWorker package, for example the Extended Client software and the NetWorker Authentication Service software.

This table provides a list of the software packages that you are required to specify for each installation type.

**Table 11 List of software packages for each installation type**

<table>
<thead>
<tr>
<th>Installation type</th>
<th>Packages</th>
</tr>
</thead>
</table>
| Client software and Extended Client software | `lgtoclnt*.rpm` `lgtoxtdclnt*.rpm` `lgtolicm*.rpm`  
  *The `lgtolicm*.rpm` is optional and installs the EMC NetWorker License Manager software.* |
| Storage Node software                      | `lgtoclnt*.rpm` `lgtoxtdclnt*.rpm` `lgtonode*.rpm`                         |
  *Note*  
  The `lgtoadpt` package is required when NMM clients exist in the datazone. |
| Block-Based Backup software                | `lgtoclnt*.rpm` `lgtobbb*.rpm`                                            |
| Avamar client software                     | `AvamarClient-linux*.rpm`                                                 |
| Man pages                                  | `lgtoman*.rpm`                                                            |
| Simplified Chinese language support        | `lgtozh*.rpm`                                                             |
| French language support                    | `lgtofr*.rpm`                                                             |
| Japanese language support                  | `lgtoja*.rpm`                                                             |
| Korean language support                    | `lgtoko*.rpm`                                                             |

5. After you update the NetWorker software, EMC recommends that you delete the contents of the `/nsr/tmp` directory.
6. For a NetWorker server only, configure the NetWorker Authentication Service:
   a. To start the NetWorker Authentication Service configuration script, 
      type `opt/nsr/authc-server/scripts/authc_configure.sh`.
   b. At the Specify the directory where the Java Standard Edition Runtime 
      Environment software is installed prompt, Press Enter to accept the 
      default location, `/usr/java/latest`.
   c. The configuration process uses port 9090 for communication. If the 
      configuration process detects that the port is in use, a warning similar to the 
      following appears: Warning: Port 9090 is already in use.

      Perform the following steps to specify a different port.
      a. At the Do you wish to specify a different port number prompt, press 
         Enter to accept the default response, Yes.
      b. At the Specify the port that Apache Tomcat should use for 
         communication? prompt, specify the port number.

      **Note**
      Valid port numbers are between 1024 and 49151. If the configuration 
      process detects that the port that you specified is in use, a prompt asks 
      if you want to select a different port number.
   d. At the Specify the keystore password prompt, type the keystore 
      password.
      Specify a password that contains at least six characters and does not 
      contain dictionary words.
   e. At the Confirm the password prompt, type the keystore password.
   f. At the Specify an initial password for administrator prompt, type a 
      password for the administrator user account. You will use this password to 
      log in to the NMC server.
      Ensure the password complies with the following minimum requirements:
      - Nine characters long
      - One uppercase letter
      - One lowercase letter
      - One special character
      - One numeric character
   g. At the Confirm the password prompt, type the password for the 
      administrator account.

7. Start the NetWorker daemons: `/etc/init.d/networker start`

   When you start the NetWorker daemons on a NetWorker server, the process 
   will migrate some NetWorker 8.2 resource attributes values to create new 
   NetWorker 9.1 resources. The chapter Reviewing the Migration Status provides 
   more information about how to review the results of the migration process.

8. Confirm that the NetWorker daemons have started, by typing the following 
   command:
   `/etc/init.d/networker status`
For a NetWorker server, the nsrctl daemon starts. The nsrctl daemon starts other processes that the NetWorker server requires. Output similar to the following appears when the daemons are started:

```
---o nsrctl (29021)
   +--o epmd (29029)
   +--o rabbitmq-server (29034)
      +--o beam (29038)
         +--o inet_gethost (29144)
         +--o inet_gethost (29145)
   +--o jsvc (29108)
   +--o jsvc (29114)
---o nsrd (29123)
   +--o java (29135)
   +--o nsrmmdbd (29828)
   +--o nsrindexd (29842)
   +--o nsrdispd (29853)
   +--o nsrjobd (29860)
   +--o nsrvmsd (29968)
   +--o connectemc (29131)
   +--o eventservice.ru (29154)
      +--o jsvc (29158)
      +--o jsvc (29159)
---o java (29838)
   +--o node-linux-x64- (29885)
---o nsrexecd (29004)
   +--o nsrlogd (29899)
   +--o nsrsnmd (30038)
```

If you do not see this output, type `/etc/init.d/networker start`

9. For NetWorker Server installations only, install and configure the EMC Licensing Solution. The *EMC NetWorker Licensing Guide* provides more information.

**Results**

The startup process migrates the NetWorker Server media database to a new format. Messages similar to the following appear in the daemon.raw file when the migration completes successfully:

```
NSR Media database completed extended consistency checks.
NSR Original media database has been renamed to '{NetWorker_installation_directory/mm/mmvolume6.Aug_11_15
```

**Note**

Do not perform any NetWorker commands while the media database conversion is in progress. The migration might fail and messages similar to the following appear in the daemon.raw:

```
NSR info Migration unsuccessful: Unable to rename original media database '{NetWorker_installation_directory/mm/mmvolume6': The process cannot access the file because it is being used by another process. (Win32 error 0x20)
```

If the migration fails, stop the NetWorker command, then stop and restart the NetWorker Server daemons to perform the media database conversion again.
If you update a NetWorker Server that is also the NMC Server and the update procedure fails, review the `daemon.raw` file to determine if the migration completed.

**Updating the NMC server**

The NMC server uses the NetWorker Authentication Service on the NetWorker server for user access and user management. Before you update the NMC server, ensure that you update the NetWorker server software and start the NetWorker daemons on the NetWorker server.

**NMC server requirements**

The following table provides a list of the default file locations.

<table>
<thead>
<tr>
<th>NetWorker package</th>
<th>Location</th>
<th>Space for Linux x86</th>
<th>Space for Linux em64T and AMD64</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMC server (LGTOnmc)</td>
<td>/opt/lgtonmc</td>
<td>167 MB</td>
<td>167 MB</td>
</tr>
</tbody>
</table>

The NMC server software supports the following operating systems:

- Redflag Asianux Server 3
- RHEL 5, 6, and 7 (64-bit)
- SuSE 10, 11, and 12 (64-bit)
- CentOS 5, 6, and 7 (64-bit)
- OEL 5.8, 6.5, and 7 (64-bit)

**Note**

You might require UTF-8 converters for the operating system.

The *EMC NetWorker Online Software Compatibility Matrix* provides the latest information on supported NMC server operating systems.

**Performing a manual backup of the NMC server database**

Use the `savepsm` command to perform a manual backup of the NMC server database.

UNIX man page and the *EMC NetWorker Command Reference Guide* provides detailed information about the `savepsm` command.

**Procedure**

1. For Linux hosts, if you did not install NMC server software in the default path `/opt/lgtonmc`, then add the `NMC_install_dir/bin` directory to the `LD_LIBRARY_PATH` environment variable.
2. From a command prompt, use the `savepsm` command to backup the NMC database

   `savepsm staging_directory`

   where `staging_directory` is the location that the backup uses to temporarily store a copy of the NMC database for backup.

   For example, on windows, type:
Updating the NMC server software

Use the `rpm -U` command to update the NMC server software without first removing the previous version of the software.

**Procedure**

1. Use the `rpm -qa | grep lgto` command to display the list of installed NetWorker packages.

2. From the directory that contains the latest version of extracted NetWorker software packages, type:

   ```
   rpm -Uvh lgtoclnt-*.rpm lgtonmc*.rpm package [package]...
   ```

   where `package [package]...` is a list of NetWorker 8.1.x or 8.2.x optional software packages or additional NetWorker 9.1 packages.

   For example:

   - To update the NMC server, and install the optional man pages and install the Extended Client software, type:

     ```
     rpm -Uvh lgtoclnt-*.rpm lgtonmc*.rpm lgtoxtclnt*.rpm
     ```

   - To update an NMC server that is also the NetWorker server, type:

     ```
     rpm -Uvh lgtoclnt-*.rpm lgtonode*.rpm lgtoxtclnt*.rpm lgtoauthc*.rpm lgtoserv*.rpm lgtonmc*.rpm lgtonmc*.rpm
gamon*.rpm
     ```

   **Note**

   A message similar to the following might appear during the update process:

   `lgto_gst" deleted from file /root/.odbc.ini` This is expected behavior and an informational message only.

3. When the NMC server is also the NetWorker server, perform the following steps to configure the NetWorker Authentication Service:

   a. To start the NetWorker Authentication Service configuration script, type/`opt/nsr/authc-server/scripts/authc_configure.sh`.

   b. At the **Specify the directory where the Java Standard Edition Runtime Environment software is installed** prompt, Press Enter to accept the default location, `/usr/java/latest`.

   c. At the **Specify the keystore password** prompt, type the keystore password.

      Specify a password that contains at least six characters and does not contain dictionary words.

   d. At the **Confirm the password** prompt, type the keystore password.

   e. At the **Specify an initial password for administrator** prompt, type a password for the administrator user account. You will use this password to log in to the NMC server.

      Ensure the password complies with the following minimum requirements:
You will use the administrator account to log in to the NMC Server.

f. At the **Confirm the password** prompt, type the password for the administrator account.

4. Start the NetWorker daemon on the Linux host:

   `/etc/init.d/networker start`

Updating and configuring the NMC server

When you update from 8.1.x and 8.2.x, use the `nmc_config` command to configure the NMC server software and convert the NMC database from Sybase to Postgres.

**Before you begin**

Before you start the NMC configuration script, ensure that the `nsreecd` daemon is running on the NMC host and the NetWorker daemons are running on the NetWorker Server. Use the `/etc/init.d/networker status` command to confirm that the daemons are started. If required, use the `/etc/init.d/networker start` command to start the NetWorker daemons. The configuration requires communication with processes on the NetWorker Server. When the NMC Server is not the NetWorker Server, ensure that the NMC Server can communicate with the NetWorker Server.

**Procedure**

1. Start the configuration script, by typing the following command:

   `/opt/lgtonmc/bin/nmc_config`

2. If the NetWorker services are not started on the NMC Server, the NetWorker services are not running on this host. Do you want to start them now? `prompt` appears. To start the NetWorker services, press **Enter**.

3. From the **Specify the user for the database server** prompt, type the name of a non-root user that will start the embedded PostgreSQL database on the NMC Server. To use the default username `postgres`, press **Enter**.

4. If the user does not exist, the **User username is not a local user,** `prompt` appears. To create a new user account, type **Y**.

   The installation creates a new OS user, in disabled mode. NMC uses this user account to start the Postgres database.

5. From the **Specify the directory to use for the NMC database** prompt, specify a path or press **Enter** to accept the default path `/nsr/ncdb`.

6. For updates from NMC 8.1.x and 8.2.x, perform the following steps:
a. On the Do you want to migrate data from a previous LGTOnmc 8.x.x.
release prompt, type y.

b. On the Specify the directory that contains the unloaded data prompt,
specify the path to the directory that contains 8.x.x conversion files that are
created by the gstdbunload command.

7. From the Specify the host name of the NetWorker Authentication Service host prompt, specify the name of the
NetWorker Server that you want to use for NMC and NetWorker Server user authentication.

Note

If the configuration script does not detect the NetWorker Authentication Service on the host that you specified, or the authentication service does not
use the default port 9090, a warning message appears. The configuration script prompts you to specify a different authentication server host. Type y and when
prompted, type the hostname and port of the NetWorker Authentication Service host.

8. When prompted to start the NMC Server daemons, type y.

9. Confirm that the NMC server daemons have started, by typing the following command: ps -ef | grep lgtonmc.

Output similar to the following appears when the daemons have started:

```
root 3064  1  0 10:03 ?  00:00:01 /opt/lgtonmc/bin/gstdbuser 3329  1  0 10:04 ?  00:00:00 /opt/lgtonmc/postgres/bin/postgres -D /opt/lgtonmc/nmcdb/pgdata
root 3969  1  0 10:04 ?  00:00:00 /opt/lgtonmc/apache/bin/httpd -f /opt/lgtonmc/apache/conf/httpd.conf
nobody 3970 3969  0 10:04 ?  00:00:00 /opt/lgtonmc/apache/bin/httpd -f /opt/lgtonmc/apache/conf/httpd.conf
```

Troubleshooting NMC installation and configuration issues

This section describes how to troubleshoot and resolve common NMC installation and
configuration issues.

ERROR: Command /opt/lgtonmc/bin/gstdbinit -U postgres -n 5432 /nsr/nmc/nmcdb failed
This message appears when the nmc_config command is initializing the NMC server
database.

Error messages similar to the following appear in the /nsr/nmc/nmcdb/pgdata/db_output.log file:

```
Auto configuration failed 6729:error:0200100D:system library:fopen:Permission
denied:bss_file.c:126:fopen('/space/tpkgs/openssl/098zc/install/openssl.cnf','rb')
```

Error messages similar to the following appear in the /opt/lgtonmc/logs/install.log file:
waiting for server to start........ stopped waiting pg_ctl:
could not start server Examine the log output. 107558:gstdbinit: The binary '/opt/lgtonmc/postgres/bin/pg_ctl' did not launch or complete successfully

When you manually run the command /opt/lgtonmc/bin/gstdbinit -U postgres -n 5432 /nsr/nmc/nmcdb, the following error appears: /opt/lgtonmc/bin/gstdbinit: error while loading shared libraries: libltdl.so.3: cannot open shared object file: No such file or directory

This issue appears when the `LD_LIBRARY_PATH` variable is not correctly set.

To resolve this issue, perform the following steps:

1. Determine the NMC installation path, by default the NMC installation path is /opt/lgtonmc.
2. Add the NMC odbc directory to the `LD_LIBRARY_PATH` variable. For example, when the NMC installation path is the default location, type the following command:

   ```
   export LD_LIBRARY_PATH=/opt/lgtonmc/postgres/odbc
   ```

3. Initialize the NMC database, by typing the following command:

   ```
   NMC_installation_path/bin/gstdbinit -U postgres -n 5432 /nsr/nmc/nmcdb
   ```

   where: `NMC_installation_path` is /opt/lgtonmc by default and `XX` is a number that you specify to create a new subdirectory.

   For example, if the NMC server uses the default location and the /opt/lgtonmc/nmcdb1 directory exists, type the following command:

   ```
   /opt/lgtonmc/bin/gstdbinit -U postgres -n 5432 /opt/lgtonmc/nmcdb2
   ```

4. Start the NMC database, by typing the following command:

   ```
   NMC_installation_path/postgres/bin/pg_ctl -D NMC_installation_path/nmcdbXX/pgdata -l logfile start
   ```

   where: `NMC_installation_path` is /opt/lgtonmc by default and `nmcdbXX` is the subdirectory that you created in the previous step.

   For example, if the NMC server uses the default location and the `nmcdb` directory nmcdb2, type:

   ```
   /opt/lgtonmc/postgres/bin/pg_ctl -D /opt/lgtonmc/nmcdb2/pgdata -l logfile start
   ```

Optional, installing the Block Based Backup software

On supported SuSE, RHEL, and CentOS operating systems, you can install Block Based Backup (BBB) software. The *EMC NetWorker Online Software Compatibility Matrix* provides more information about supported operating systems.

Before you begin

Before you install the BBB software, ensure that you install the OS `lsb` package. On RHEL, install the `lsb` package. On SUSE, install the `lsb-release` package.

Procedure

1. Ensure that the NetWorker client package is installed on the target host.
2. From the directory that contains the extracted NetWorker software packages, use the **yum** installer application or the **rpm** command to install the NetWorker packages.

   - **To use yum**, type:
     
     ```
     yum localinstall --nogpgcheck lgtobbb*.rpm
     ```

     **NOTICE**

     When the **yum** program cannot install missing package dependencies, the **yum** command fails and provides a list of missing packages. Manually install the package dependencies, and run the **yum** command again.

   - **To use rpm**, type:
     
     ```
     rpm -ivh lgtobbb*.rpm
     ```

     **Note**

     When the operating system packages that NetWorker requires are missing, the **rpm** command provides a list of missing packages and does not install the NetWorker software. Manually install missing package dependencies then run the **rpm** command again.

### Optional, Avamar client

This section describes how to install and register the Avamar client on a NetWorker host that used Avamar as a data protection host on a previous version of NetWorker.

#### Installing SUSE Linux Enterprise Server (SLES) 11 compatibility libraries

If installing Avamar Client for Linux on a 64- or 32-bit version of SUSE Linux Enterprise Server (SLES) 11, install **libxml2** and **libxml2-python** compatibility libraries.

**Procedure**

1. Open a command shell and log in as root.
2. Obtain a copy of the following libraries for the system:
   - **For 64-bit versions:**
     
     ```
     libxml2-2.7.6-0.1.37.x86_64.rpm and libxml2-python-2.7.6-0.1.36.x86_64.rpm
     ```
   - **For 32-bit versions:**
     
     ```
     libxml2-2.7.6-0.1.37.i586.rpm and libxml2-python-2.7.6-0.1.36.i586.rpm
     ```
3. Type the following command on a single command line:
   - **For 64-bit versions:**
     
     ```
     rpm -Uvh libxml2-2.7.6-0.1.37.x86_64.rpm libxml2-python-2.7.6-0.1.36.x86_64.rpm
     ```
   - **For 32-bit versions:**
     
     ```
     rpm -Uvh libxml2-2.7.6-0.1.37.i586.rpm libxml2-python-2.7.6-0.1.36.i586.rpm
     ```
4. Follow the onscreen prompts to complete the installation.
Installing CentOS 32-bit compatibility libraries

If you will install the Avamar Client for Linux on a 32-bit version of CentOS, install the compat-libstdc++-33 libraries.

Procedure

1. Open a command shell and log in as root.
2. Obtain a copy of the compat-libstdc++-33 libraries for the system.
3. Type the following command to install the system's compat-libstdc++ package:
   ```
   rpm -ivh compat-libstdc++-33-3.2.3-61.i386.rpm
   ```
4. Follow the onscreen prompts to complete the installation.

Installing the Avamar client

If the host used Avamar as a data protection target on a previous version of NetWorker, install the Avamar client.

The *EMC Avamar 7.2 Backup Clients User Guide* provides more information about how to use the Avamar Client software.

Procedure

1. Log in to the host as root.
2. From the directory that contains the latest version of extracted NetWorker software packages, type:
   ```
   rpm -ih AvamarClient-linux-distribution-x86-7.2.xxx-xxx.rpm
   ```
   where:
   - *distribution* is rhel4 or sles11. Use rhel4 when the operating system is RHEL or CentOS. Use sles11 when the operating system is SuSE.
   - *xxx-xxx* is the Avamar client version.

Updating the NetWorker client software on Debian and Ubuntu

Use the following procedure to update the NetWorker software on Debian and Ubuntu.

Uninstalling the NetWorker software

To uninstall the NetWorker software, complete the following procedure.

Procedure

1. Log in to the target host as root.
2. Stop the the `nsrexc` daemon, by typing the following command:
   ```
   nsr_shutdown
   ```
3. To uninstall the NetWorker client software, use the `dpkg` command.
   For example, to remove the NetWorker Client software, type the following command:
dpkg -r lgtoclnt

4. If no plan exists to update or reinstall the NetWorker software, use the `dpkg -P` command to remove the NetWorker configuration files.

   For example, to remove the NetWorker configuration files for the NetWorker Client software, type the following command:

   `dpkg -P lgtoclnt`

Installing the NetWorker client packages

Use the `dpkg` program to install the NetWorker client software. To install the operating system packages that the NetWorker client software requires, use the `apt-get` program.

Before you begin

Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files. Ensure that there is sufficient disk space on the host. The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

Table 13 Size of compressed and uncompressed files

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Package name</th>
<th>Compressed file size</th>
<th>Uncompressed file size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux x86</td>
<td>nw91_linux_x86.tar.gz</td>
<td>299 MB</td>
<td>306 MB</td>
</tr>
<tr>
<td>Linux x86-64</td>
<td>nw91_linux_x86_64.tar.gz</td>
<td>1.23 GB</td>
<td>1.26 MB</td>
</tr>
</tbody>
</table>

**NOTICE**

Ubuntu 10 requires the libstdc++5 package, but the Ubuntu software package repository does not include this package. Before you install the NetWorker client software, download and install the libstdc++5 package for Ubuntu.

The following table lists the software packages that are required for each installation type, and provides the order for package installation.

Table 14 List of software packages

<table>
<thead>
<tr>
<th>Installation type</th>
<th>Packages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client software and Extended Client software</td>
<td>lgtoclnt*.deb lgtoxtclnt*.deb</td>
</tr>
<tr>
<td>Avamar Client software</td>
<td>AvamarClient-debian*.deb</td>
</tr>
</tbody>
</table>

**Note**

Install this package only when you are updating an NetWorker 8.1.x and 8.2.x host that uses Avamar as a data protection target.
Procedure

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.

2. Change to the temporary location that contains the software package, and then unzip and extract the files by typing the **tar** command.
   
   For example:
   
   ```
   tar -xzf file_name.tar.gz
   ```

3. From a command prompt, type the **dpkg** command. For example:

   ```
   dpkg -i package package...
   ```

   **NOTICE**

   For Ubuntu, use **sudo** to run the **dpkg** command.

   For example, to install the NetWorker Client and Extended Client, type the following command:

   ```
   dpkg -i lgtoclnt_9.1_amd64.deb lgtoxtclnt_9.1_amd64.deb
   ```

   If the required operating system packages are missing, dependency errors similar to the following appear:

   Unpacking lgtoclnt (from lgtoclnt_9.1_amd64.deb) ...
   dpkg: dependency problems prevent configuration of lgtoclnt:
   lgtoclnt depends on ksh | pdksh; however:
   Package ksh is not installed.
   Package pdksh is not installed.
   lgtoclnt depends on libstdc++5; however:
   Package libstdc++5 is not installed.
   lgtoclnt depends on libxp6; however:
   Package libxp6 is not installed.
   dpkg: error processing lgtoclnt (--install):
   dependency problems - leaving unconfigured
   Errors were encountered while processing:
   lgtoclnt

4. To install missing packages, type the **apt-get** command.

   For example,

   ```
   sudo apt-get -f upgrade
   ```

   The **apt-get** command automatically completes the NetWorker software installation.

5. To confirm that the **nsrexecd** process starts, type the following command:

   ```
   ps -ef | grep nsrexecd
   ```

   If the **nsrexecd** daemon does not appear in the output, start the **nsrexecd** process by typing the following command:

   ```
   sudo nsrexecd
   ```
Installing the Avamar client

If the host used Avamar as a data protection target on a previous version of NetWorker, install the Avamar client.

The *EMC Avamar 7.2 Backup Clients User Guide* provides more information about how to use the Avamar Client software.

Procedure

1. Log in to the host as root.
2. From the directory that contains the extracted software packages, use the `dpkg` command to install the Avamar client software.
   
   For example:
   ```
   dpkg -i AvamarClient-debian4.0-x86_64-7.2.100-288.deb
   ```

Updating the NetWorker client software on Fedora

Use the following procedure to update the NetWorker software on Fedora.

Uninstalling the NetWorker software

Use the `rpm -e package_name` command to remove individual NetWorker software packages or all NetWorker software packages simultaneously. For information about using `rpm`, refer to the `rpm` man page.

Procedure

1. Connect to the NetWorker host with the root account.
2. To view a list of the installed NetWorker packages, type the following command:
   ```
   rpm -qa | grep lgto
   ```
3. To remove the NetWorker packages, type the `rpm -e` command:
   ```
   rpm -e package_name package_name package_name
   ```
   For example, to remove the NetWorker client packages, type:
   ```
   rpm -e lgtoclint
   ```

   The following table provides a list of the package names that are associated with the different NetWorker components.

<table>
<thead>
<tr>
<th>Component</th>
<th>Package name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
<td>lgtoclint</td>
</tr>
<tr>
<td>Man pages</td>
<td>lgtoman</td>
</tr>
<tr>
<td>French language support</td>
<td>lgtofr</td>
</tr>
<tr>
<td>Japanese language support</td>
<td>lgtoja</td>
</tr>
</tbody>
</table>
4. If you do not plan to update or reinstall the packages, remove the /nsr directory.

Installing the NetWorker client packages

Before you begin

Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files. Ensure that there is sufficient disk space on the host. The following table provides a list of the NetWorker packages and the compressed and uncompressed file sizes.

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Package name</th>
<th>Compressed file size</th>
<th>Uncompressed file size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux x86</td>
<td>nw91_linux_x86.tar.gz</td>
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<tr>
<td>Linux x86-64</td>
<td>nw91_linux_x86_64.tar.gz</td>
<td>1.23 GB</td>
<td>1.26 MB</td>
</tr>
</tbody>
</table>

This table lists the available NetWorker software packages.

<table>
<thead>
<tr>
<th>Installation type</th>
<th>Packages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client software and Extended Client software</td>
<td>lgtoclnt*.rpm lgtoxtdclnt*.rpm</td>
</tr>
<tr>
<td>Man pages</td>
<td>lgto*rpm</td>
</tr>
<tr>
<td>Simplified Chinese language support</td>
<td>lgtozh*rpm</td>
</tr>
<tr>
<td>French language support</td>
<td>lgtofr*rpm</td>
</tr>
<tr>
<td>Japanese language support</td>
<td>lgtoja*rpm</td>
</tr>
<tr>
<td>Korean language support</td>
<td>lgto*rpm</td>
</tr>
</tbody>
</table>

Complete the following steps to install the NetWorker software on the Fedora operating system. Perform additional steps to resolve package dependency issues.

Procedure

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.
2. Change to the temporary location that contains the software package, and then unzip and extract the files by typing the `tar` command.

For example:

```
tar -xzf file_name.tar.gz
```
3. Install the missing package dependencies, with the exception of libcap.so.1.

   a. To identify missing dependencies, type the **yum** command with the **localinstall** option.

      For example:

      ```
      yum localinstall lgtocln*.rpm
      Packages skipped because of dependency problems:
      compat-libstdc++-33-3.2.3-68.1.x86_64 from fedora
      ksh-20120801-1.fc16.x86_64 from updates
      libXp-1.0.0-16.fc15.x86_64 from fedora
      nss-softokn-freebl-3.13.5-1.fc16.i686 from updates
      
      Note
      
      The **yum** command does not successfully install the NetWorker software.
      
      b. To install the missing package dependencies, type the **yum** command with the **install** option.

      For example:

      ```
      When you specify the glib package, use the full package name to ensure the correct glib package installs and not the glibc-2.14.90-24.fc16.9.x86_64 package.

4. To confirm that you resolved all missing package dependencies, with the exception of libcap.so.1, type the **rpm** command.

   For example, to determine what pacckages are missing for the NetWorker Client software, type the following command:

   ```
   rpm -ivh lgtocln*.rpm
   error: Failed dependencies:
   libcap.so.1 is needed by lgtocln-8.1-1.i686
   
   5. To install the NetWorker software and ignore the libcap.so.1 dependency, type the **rpm** command with the **--nodeps** option.

   For example,

   ```
   rpm -ivh --nodeps lgtocln*.rpm lgtoman*.rpm
   ```

   where **package [package]**...is a list of the software package that is required for the installation type.

   For example, to install the man pages during a NetWorker client install, type:

   ```
   rpm -ivh --nodeps lgtocln*.rpm lgtoman*.rpm
   ```
CHAPTER 4

Updating NetWorker for Windows

This chapter describes how to update the NetWorker software for Windows and includes the following topics:

- Roadmap for updating NetWorker from 8.1.x or 8.2.x on Windows ..................... 68
- Roadmap for updating NetWorker from 9.0.x on Windows .................................. 85
Roadmap for updating NetWorker from 8.1.x or 8.2.x on Windows

Use the following procedures to update and configure the NetWorker and NMC software:

- Updating the NetWorker software
- Updating the NMC server software

Note

If your NetWorker server and your NMC server are on different hosts, you must update NetWorker on the NetWorker server host before the NMC server host.

Updating the NetWorker software

Follow these procedures to update the NetWorker software, which includes the NetWorker server, storage node, and client.

Note

The update process will only update existing NetWorker components. You cannot change the installation type during an update. The EMC NetWorker Installation Guide describes how to change the installation type and how to add additional NetWorker components.

Preparing the NetWorker server

Before you update the NetWorker server, ensure that the media database and client file indexes are in a consistent state and that you have a backup of the databases.

To prepare the NetWorker server, perform these steps from a command prompt on the NetWorker server as root on UNIX or administrator on Windows.

Procedure

1. Put the NetWorker databases in a consistent state:
   
   `nsrim -X`
   
   `nsrck -m`
   
   `nsrck -L6`

2. Record the current location of the NetWorker client file indexes:
   
   `nsrls`

3. Record the range of ports the NetWorker software uses:
   
   `nsrports`

4. Perform a backup of the bootstrap, the client file indexes, and the resource database, type `savegrp -O group_name`
   
   where `group_name` is the name of a group that contains all the NetWorker clients in the datazone. If a group that contains all the clients does not exist, run multiple `savegrp` commands, specifying a different group each time. This will ensure that you back up the clients indexes for each client in the datazone.
Note

Ensure the media pool associated with the group has appendable media available.

5. Record the latest bootstrap save set ID (ssid) including the file number, the record number, and the associated volume label.

For example:

```
mminfo -B
date time level ssid file record volume
10/11/11 16:29:40 full 4254377781 0 0 bootstrap_vol.001
```

In this example:

- The save set ID (ssid) is 4254377781.
- The file number is 0.
- The record number is 0.
- The label of the volume that contains the bootstrap save set is `bootstrap_vol.001`.

NetWorker server only, back up the LDAP or AD configuration

If the NetWorker datazone uses LDAP or AD to authenticate access to the NetWorker server and NMC server, create a copy of the configuration file, `C:\Program Files \EMC NetWorker\nsr\cst\Config.xml`.

Updating the NetWorker software

On Windows, the procedure to update the NetWorker software depends on the version you are updating to and from.

Each NetWorker version consists of numerical values in the following versioning schema: `major.minor.service_pack.hotfix`. For example, the 6th cumulative build of NetWorker 9.0 is `9.0.0.6`.

Consider the following scenarios:

- When you update from a version of the NetWorker software that shares the same service pack number as the newer software version, first remove the older version of the NetWorker software. Once removed, install the new version of the NetWorker server software. For example:
  - When you want to update a NetWorker host from NetWorker 9.0 (9.0.0.0) to cumulative hotfix version 9.0.0.6.
  - When you want to update a NetWorker host from cumulative hotfix version 9.0.0.1 to 9.0.0.6.

The _EMC NetWorker Installation Guide_ describes how to remove the previous version of the NetWorker software and install the new version.

- When you update from a version of the NetWorker software that does not share the same service pack number as the newer version, you can use the installation command to update the NetWorker software, without first removing the previous version of the software. For example, when you want to update from NetWorker cumulative hotfix version 8.1.5.1 to NetWorker 9.0.1 (9.0.1.0).
To update the NetWorker software on a host to a version that does not share the same service pack number, review the following sections.

**Updating the NetWorker server software**

You can use the `NetWorker-9.1.0.0.exe` command to update the NetWorker server software without first removing the previous version of the software. When you install the NetWorker Server software, the installation also installs the NetWorker Client, Storage Node, BBB, NetWorker Authentication Service, and Extended Client software.

**Before you begin**

NetWorker supports the Oracle HotSpot and OpenJDK JRE vendors. Before you start the NetWorker Server installation, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any NetWorker Server daemons and set the `JAVA_HOME` environment variable.

If the NetWorker server is also the NMC server, you will update both options at the same time. Updating the NMC server on a NetWorker server describes how to update the NetWorker server and NMC server software on the same host.

**Procedure**

1. Log in to the target host with a user that has administrator privileges.
2. If the NetWorker server is also an NMDA client, remove the NMDA software.
3. Download the NetWorker software package from the EMC Online Support website to a temporary location. The package name is `nw91_win_x64.zip`.
4. Extract the NetWorker packages found in `nw91_win_x64.zip` to a temporary location on the target host.
5. In the directory that contains the extracted NetWorker software run `NetWorker-9.1.0.0.exe`.

---

**Note**

While you can run the `NetWorker-9.1.0.0.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in the zip file from a network share, you cannot run the binary until you edit the properties of the file, and then click **Unblock**.

---

6. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.
7. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

---

**NOTICE**

If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

---

8. In the **Wizard Options Page** page, perform the following steps:
   - To install the Avamar Client software, select **Avamar client**.
Note

Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

- (Optional) To install the Avamar software in a location other than the default location, click the **Browse** button (...), and then specify the installation path.

9. Click **Next**. Review the licensing notice that appears, and then click **OK**.

10. (Required) The **Configure NetWorker Authentication Service** page appears in the following scenarios:
   - The default NetWorker Authentication port, 9090 is in use. In the **Apache Tomcat Port** field, type another port number for Tomcat to use, and the click **Next**.
   - The default password for the Java Common Truststore on the host is not the default password (changeit). When the password is not changeit, the installation displays a **JRE Certificate Store Error** window. Click **Ok**, and then in the **Trust store password** field, type the password for the Java Common Truststore, and then click **Next**.

11. In the **Configure NetWorker Authentication Service Keystore** page, specify a password for the keystore file, then click **Next**.
    Specify a password that contains at least six characters and does not contain dictionary words.

12. On the **Configure NetWorker Authentication Service** window, specify the password for the authentication service administrator account.
    Ensure the password complies with the following minimum requirements:
    - Nine characters long
    - One uppercase letter
    - One lowercase letter
    - One special character
    - One numeric character

Note

You will use the administrator account to log in to the NMC Server.

13. Click **Upgrade**.
    The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the **Complete the Setup** page provides the status of upgrade and a link to the master setup log file.

Note

A **Windows installer has stopped working** message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

14. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the
NetWorker Server Selection page, perform one of the following tasks, and then click OK:

- In the Enter a server name field, type the NetWorker Server name and then click Add. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.

- To add a NetWorker Server that is not listed in the Available Servers list:
  a. Type the hostname of the NetWorker Server in the Enter a server name text box.
  b. Click Add.

- To browse for available NetWorker Servers:
  a. Click Update List.
  b. From the Available Servers list, select a NetWorker Server.

- To add or remove a NetWorker Server from the Available Servers list to the Selected Servers list, click the arrow buttons.

The NetWorker_installation_directory\res\servers file contains a list of trusted NetWorker Servers.

Note

If you do not select the Select Backup Server option, the installation creates an empty servers file. When an empty servers file exists on a host, any NetWorker Server has client-tasking rights to the host. The EMC NetWorker Administration Guide provides more information about client-tasking rights.

The first entry in the servers file becomes the default NetWorker Server for the host.

15. Click Finish.

16. For NetWorker Server installations only, install and configure the EMC Licensing Solution. The EMC NetWorker Licensing Guide provides more information.

Results

The startup process migrates the NetWorker Server media database to a new format. Messages similar to the following appear in the daemon.raw file when the migration completes successfully:

NSR Media database completed extended consistency checks.
NSR Original media database has been renamed to
'NetWorker_installation_directory/mm/mmvolume6.Aug_11_15
Do not perform any NetWorker commands while the media database conversion is in progress. The migration might fail and messages similar to the following appear in the daemon.raw:

NSR info Migration unsuccessful: Unable to rename original media database 'NetWorker_installation_directory\mm\mmvolume6': The process cannot access the file because it is being used by another process. (Win32 error 0x20)

If the migration fails, stop the NetWorker command, then stop and restart the NetWorker Server daemons to perform the media database conversion again.

If you update a NetWorker Server that is also the NMC Server and the update procedure fails, review the daemon.raw file to determine if the migration completed.

Updating the NetWorker storage node software

You can use the NetWorker-9.1.0.0.exe command to update the NetWorker storage node software without first removing the previous version of the software. The NetWorker Storage Node update process also installs the NetWorker Client and Extended Client software.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Obtain the NetWorker software package from the EMC Online Support Site.
3. Extract the NetWorker packages found in nw91_win_x64.zip to a temporary location on the target host.
4. For NMDA and NMM clients only, remove the NetWorker module software.
5. In the directory that contains the extracted NetWorker software run NetWorker-9.1.0.0.exe.

While you can run the NetWorker-9.1.0.0.exe from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in the zip file from a network share, you cannot run the binary until you edit the properties of the file, and then click Unblock.

6. In the Wizard Welcome page, select I agree to the license terms and agreements, and then click Next.
7. In the Configure Windows Firewall page, select Configure the Windows firewall, and then click Next.

If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

8. In the Wizard Options Page page, perform the following steps:
To install the Avamar Client software, select **Avamar client**.

**Note**

Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

- (Optional) To install the Avamar software in a location other than the default location, click the **Browse** button (...), and then specify the installation path.

9. Click **Upgrade**.

The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the **Complete the Setup** page provides the status of upgrade and a link to the master setup log file.

**Note**

A **Windows installer has stopped working** message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

10. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the **NetWorker Server Selection** page, perform one of the following tasks, and then click **OK**:

   - In the **Enter a server name** field, type the NetWorker Server name and then click **Add**. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
   - To add a NetWorker Server that is not listed in the **Available Servers** list:
      a. Type the hostname of the NetWorker Server in the **Enter a server name** text box.
      b. Click **Add**.
   - To browse for available NetWorker Servers:
      a. Click **Update List**.
      b. From the **Available Servers** list, select a NetWorker Server.
   - To add or remove a NetWorker Server from the **Available Servers** list to the **Selected Servers** list, click the arrow buttons.

   **Note**

   If you do not select the **Select Backup Server** option, the installation creates an empty **servers** file. When an empty **servers** file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

   The **servers** file contains a list of trusted NetWorker Servers.

   The first entry in the **servers** file becomes the default NetWorker Server for the host.

11. Click **Finish**.
Updating the NetWorker Client software

Perform the following steps to update a NetWorker client. EMC recommends that you use the lgtoclnt-9.1.0.0.exe package to install the NetWorker software on a client host.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Obtain the NetWorker software package from the EMC Online Support Site.
3. Extract the NetWorker packages found in the nw_win_x64.zip or nw_win_x86.zip file, to a temporary location on the target host.
4. For NMDA and NMM clients only, remove the NetWorker module software.
5. In the directory that contains the extracted NetWorker packages, run lgtoclnt-9.1.0.0.exe.
6. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.
7. On the **Change Install location** window, click **Next**.
8. (Optional) On the **Configuration Checks Options** page, select **Run System Configuration Checker**, and then click **Check**.

The installation analyzes the host and displays status information in the **Results of Configuration Checks** page. Select **Open Detailed Report** to review detailed information about the configuration checks, and then click **Next**.

**Note**

The Configuration Checker option only appears in the Base Client Installation Wizard.

9. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

**NOTICE**

If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

10. On the **Wizard Options** page, perform the following steps:

    • To install the Avamar Client software, select **Avamar client**.
    
    **Note**

    Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

    • (Optional) To install the Avamar software in a location other than the default location, click the **Browse** button (...), and then specify the installation path.

11. Click **Upgrade**.

    The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the **Complete the Setup** page provides the status of upgrade and a link to the master setup log file.
A **Note**

**Windows installer has stopped working** message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

12. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the **NetWorker Server Selection** page, perform one of the following tasks, and then click **OK**:

- In the **Enter a server name** field, type the NetWorker Server name and then click **Add**. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
- To add a NetWorker Server that is not listed in the **Available Servers** list:
  a. Type the hostname of the NetWorker Server in the **Enter a server name** text box.
  b. Click **Add**.
- To browse for available NetWorker Servers:
  a. Click **Update List**.
  b. From the **Available Servers** list, select a NetWorker Server.
- To add or remove a NetWorker Server from the **Available Servers** list to the **Selected Servers** list, click the arrow buttons.

The `NetWorker_installation_directory\res\servers` file contains a list of trusted NetWorker Servers.

**Note**

If you do not select the **Select Backup Server** option, the installation creates an empty `servers` file. When an empty `servers` file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

The first entry in the `servers` file becomes the default NetWorker Server for the host.

13. To complete the installation, click **Finish**.

**Updating the NetWorker Extended Client software**

Perform the following steps to update the NetWorker Extended Client software.

**Procedure**

1. Log in to the target host with a user that has administrator privileges.
2. Obtain the NetWorker software package from the EMC Online Support Site.
3. Extract the NetWorker packages found in the `nw_win_x64.zip` or `nw_win_x86.zip` file, to a temporary location on the target host.
4. In the directory that contains the extracted NetWorker packages, run `lgtoxtclint-9.1.0.0.exe`
5. On the Wizard Welcome window, select **I agree to the license terms and agreements**, and then click **Upgrade**.
The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the Complete the Setup page provides the status of upgrade and a link to the master setup log file.

**Note**

A Windows installer has stopped working message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

6. Click Finish.

**Updating the NMC server software**

Use the NetWorker-9.1.0.0.exe file to update the NMC server software and import the NMC database to the new Postgres format. When you update the NMC server software, the updating process will also update the NetWorker software.

**Performing a manual backup of the NMC server database**

Use the `savepsm` command to perform a manual backup of the NMC server database.

UNIX man page and the EMC NetWorker Command Reference Guide provides detailed information about the `savepsm` command.

**Procedure**

1. For Linux hosts, if you did not install NMC server software in the default path `/opt/lgtonmc`, then add the `NMC_install_dir/bin` directory to the `LD_LIBRARY_PATH` environment variable.
2. From a command prompt, use the `savepsm` command to backup the NMC database

   `savepsm staging_directory`

   where `staging_directory` is the location that the backup uses to temporarily store a copy of the NMC database for backup.

   For example, on windows, type:

   `savepsm e:\nmcdb_stage`

**Manually migrating the NMC database**

The NMC database in 9.1.x is a Postgres database. NetWorker server 8.2.x and earlier uses a Sybase database. The Windows updating process provides you with the option to allow the process to automatically migrate the NMC database.

When you update a Windows NMC server, EMC recommends that you allow the migration process to handle the database migration. If your 8.1.x or 8.2.x NMC server is on a Windows operating system that NetWorker 9.1.x does not support, you must use the `gstdbunload` utility included with the NetWorker 9.1.x software package to convert the NMC database into a platform independent format. After you convert the database, you must copy the converted files to the Windows or Linux host that will become the new NMC server. Perform the following steps to convert the Sybase database into an Unload Database. The upgrade process will prompt you for the location of the converted files, and then import the Unload Database into a Postgres database.
Procedure

1. Stop the NetWorker and NMC services.
2. Copy the gstdbunload file from the directory to which you extracted the NetWorker 9.1.x software, into the installation_path\bin folder on the NMC server.

   By default, the installation_path is C:\Program Files\EMC NetWorker \Management\GST.

3. Create a directory that will contain the Unload Database files. Specify a location that has sufficient disk space to store the converted database. To store the Unload Database files, the conversion process requires free disk space equal to 1.5 times the size of the original database.

   Note

   The update process creates a new user for the Postgres database, and uses this new user to read the contents of the directory that contains the Unload Database. Ensure that everyone has execute level permissions to the directory and the directory contents.

4. From a command prompt, in the installation_path\bin folder, type the following command: gstdbunload target_conversion_dir

   where target_conversion_dir is the directory that you created in the previous step.

   Note

   If the NMC daemons are running the database conversion process fails with an error messages similar to the following:


   To resolve this issue, stop the NMC daemons and run the gstdbunload command again.

   The status of the conversion appears in stdout and in the target_conversion_dir/reload.log file.

5. Copy the target_conversion_dir to the target Windows or Linux NMC server.

Updating the NMC server on a NetWorker client or storage node

Perform the following steps to update the NMC server software on a NetWorker client or storage node.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Obtain the NetWorker software package from the EMC Online Support Site.
3. Extract the NetWorker packages found in nw91_win_x64.zip to a temporary location on the target host.
4. For NMDA and NMM clients only, remove the NetWorker module software.

5. In the directory that contains the extracted NetWorker software run
   `NetWorker-9.1.0.0.exe`.

   **Note**
   While you can run the `NetWorker-9.1.0.0.exe` from a network location, to
   lessen the installation time, copy the file to a location that is local to the target
   host. If you used Windows Explorer to copy the files in the zip file from a
   network share, you cannot run the binary until you edit the properties of the
   file, and then click **Unblock**.

6. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.

7. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

   **NOTICE**
   If you do not configure the firewall to allow inbound and outbound NetWorker
   software traffic, scheduled backups might fail.

8. In the **Wizard Options Page** page, perform the following steps:
   - To install the Avamar Client software, select **Avamar client**.
     **Note**
     Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that
     use an Avamar 7.2 or earlier system as a data protection target.
   - (Optional) To install the Avamar software in a location other than the default
     location, click the **Browse** button (...), and then specify the installation path.

9. Click **Next**. Review the licensing notice that appears, and then click **OK**.

10. In the **NMC Options** page, perform the following steps:
    a. (Optional) Type the path to install the NMC Server software.
       **The default location is:** `C:\Program Files\EMC NetWorker \Management`
    b. When the host is not a NetWorker server, in the **Authentication Host** field,
       type the name of one of the NetWorker 9.1.x servers that the NMC Server
       will manage. Ensure NetWorker services are started on the NetWorker
       server.
       **The NetWorker Server that you specify authenticates access to the NMC
       Server. When you log in to the NMC Server, you will specify a username and
       password that the NetWorker Authentication Service on the NetWorker
       Server can validate.**
    c. When the host is not a NetWorker server, in the **Authentication Port** field,
       type the port number used by the NetWorker Authentication Service. The
       default port number is 9090.
    d. Click **Next**.

11. If a Security Alert message appears, perform the following steps:
a. Click **View Certificate**, then select **Install Certificate**.
   The **Certificate Import Wizard** screen appears.

b. Click **Next**.

c. Select **Place all certificates on the following store**, and then click **Browse**.

d. In the **Select Certificate Store** page, select **Trusted Root Certificate Authorities**, and then click **OK**.

e. Click **Next**.

f. Click **Finish**.

g. If you are prompted to install the certificate, click **Yes**.

h. In the **Certificate Import Wizard** page, click **OK**.

i. In the **Certificate** page, click **OK**.

j. In the **Security Alert** page, click **Yes**.

12. (Optional) In the **NMC Database Options** page, modify the following configuration options, and then click **Next**:

   - **Database Destination Folder**. The default location is "C:\Program Files \EMC NetWorker\Management\nmcdb"
   - **Client Service port**. The default port is 9001.

   **Note**

   To use different port numbers, type the new port numbers (between 1024 and 49151). Do not use port numbers that are in use. For example: The NMC server uses port 5432 for TDS protocol communications with the NMC database. The preferred port for the EMC Data Protection Advisor (DPA) product is 9002.

   - **Web server port**. This port is used by the embedded HTTP server. The default port is 9000.

13. In **NMC Database Migration** page, select how you want to migrate the data from an 8.1.x or 8.2.x NMC server:

   - To start the NMC Server with a new database, select **Skip the Migration**.

   **Note**

   If you skip the migration, you cannot migrate the database after the update completes.

   - To import data from an NMC database that originates from a different NMC 8.1.x or 8.2.x server, select **Migrate the Database Manually**. When you select this option, specify the path to the Unload Database.

   **Note**

   Before you can manually migrate data to a new NMC server, ensure that the Unload Database resides locally on the new NMC server or in a remote location that is accessible to the new NMC server.

   - To allow the update to convert and migrate the NMC database on this host, select **Migrate the Database Automatically**. Accept the default directory location or specify a location that has sufficient disk space to store the
converted database. To store the converted database, the conversion requires free disk space equal to twice the size of the original database.

14. Click Upgrade.

The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the Complete the Setup page provides the status of upgrade and a link to the master setup log file.

**Note**

A Windows installer has stopped working message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

15. (Optional) In the Complete the Setup page, to define a list of NetWorker Servers that have client-tasking rights to this host, click Select Backup Server. Client-tasking rights include the ability to back up the host. In the NetWorker Server Selection page, perform one of the following tasks, and then click OK:

- In the Enter a server name field, type the NetWorker Server name and then click Add. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
- To add a NetWorker Server that is not listed in the Available Servers list:
  a. Type the hostname of the NetWorker Server in the Enter a server name text box.
  b. Click Add.
- To browse for available NetWorker Servers:
  a. Click Update List.
  b. From the Available Servers list, select a NetWorker Server.
- To add or remove a NetWorker Server from the Available Servers list to the Selected Servers list, click the arrow buttons.

The NetWorker_installation_directory\res\servers file contains a list of trusted NetWorker Servers.

**Note**

If you do not select the Select Backup Server option, the installation creates an empty servers file. When an empty servers file exists on a host, any NetWorker Server has client-tasking rights to the host. The EMC NetWorker Administration Guide provides more information about client-tasking rights.

The first entry in the servers file becomes the default NetWorker Server for the host.

16. Click Finish.

**Updating the NMC server on a NetWorker server**

Perform the following steps to update the NMC server software on a host that is also the NetWorker server. When you install the NetWorker Server software, the
installation also installs the NetWorker Client, Storage Node, BBB, NetWorker Authentication Service, and Extended Client software.

**Before you begin**

Before you start the NetWorker Server update, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any running NetWorker Server daemons.

**Procedure**

1. Log in to the target host with a user that has administrator privileges.
2. If the NetWorker server is also an NMDA client, remove the NMDA software.
3. Obtain the NetWorker software package from the EMC Online Support Site.
4. Extract the NetWorker packages found in `nw91_win_x64.zip` to a temporary location on the target host.
5. In the directory that contains the extracted NetWorker software run `NetWorker-9.1.0.0.exe`.

**Note**

While you can run the `NetWorker-9.1.0.0.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in the zip file from a network share, you cannot run the binary until you edit the properties of the file, and then click **Unblock**.

6. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.
7. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

**NOTICE**

If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

8. In the **Wizard Options Page** page, perform the following steps:

   - To install the Avamar Client software, select **Avamar client**.

**Note**

Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

   - (Optional) To install the Avamar software in a location other than the default location, click the **Browse** button (...), and then specify the installation path.

9. Click **Next**. Review the licensing notice that appears, and then click **OK**.
10. Review the **Notice** window, which describes the NetWorker License Server requirements, and then click **OK**.
11. (Required) The **Configure NetWorker Authentication Service** page appears in the following scenarios:
- The default NetWorker Authentication port, 9090 is in use. In the Apache Tomcat Port field, type another port number for Tomcat to use, and then click Next.

- The default password for the Java Common Truststore on the host is not the default password (changeit). When the password is not changeit, the installation displays a JRE Certificate Store Error window. Click Ok, and then in the Trust store password field, type the password for the Java Common Truststore, and then click Next.

12. In the Configure NetWorker Authentication Service Keystore page, specify a password for the keystore file, then click Next.

Specify a password that contains at least six characters and does not contain dictionary words.

13. On the NetWorker Authentication Service - Service Options window, specify the password for the authentication service administrator account.

Ensure the password complies with the following minimum requirements:
- Nine characters long
- One uppercase letter
- One lowercase letter
- One special character
- One numeric character

Note

You will use the administrator account to log in to the NMC Server.

14. If a Security Alert message appears, perform the following steps:
   a. Click View Certificate, then select Install Certificate.

      The Certificate Import Wizard screen appears.

   b. Click Next.

   c. Select Place all certificates on the following store, and then click Browse.

   d. In the Select Certificate Store page, select Trusted Root Certificate Authorities, and then click OK.

   e. Click Next.

   f. Click Finish.

   g. If you are prompted to install the certificate, click Yes.

   h. In the Certificate Import Wizard page, click OK.

   i. In the Certificate page, click OK.

   j. In the Security Alert page, click Yes.

15. In the NMC Options page, perform the following steps:
   a. (Optional) Type the path to install the NMC Server software.

      The default location is: C:\Program Files\EMC NetWorker Management
b. When the host is not a NetWorker server, in the **Authentication Host** field, type the name of one of the NetWorker 9.1.x servers that the NMC Server will manage. Ensure NetWorker services are started on the NetWorker server.

The NetWorker Server that you specify authenticates access to the NMC Server. When you log in to the NMC Server, you will specify a username and password that the NetWorker Authentication Service on the NetWorker Server can validate.

c. When the host is not a NetWorker server, in the **Authentication Port** field, type the port number used by the NetWorker Authentication Service. The default port number is 9090.

d. Click **Next**.

16. (Optional) In the **NMC Database Options** page, modify the following configuration options, and then click **Next**:

- **Database Destination Folder.** The default location is "C: \ Program Files \ EMC NetWorker \ Management \ nmcdb"

- **Client Service port.** The default port is 9001.

  **Note**

  To use different port numbers, type the new port numbers (between 1024 and 49151). Do not use port numbers that are in use. For example: The NMC server uses port 5432 for TDS protocol communications with the NMC database. The preferred port for the EMC Data Protection Advisor (DPA) product is 9002.

- **Web server port.** This port is used by the embedded HTTP server. The default port is 9000.

17. In **NMC Database Migration** page, select how you want to migrate the data from an 8.1.x or 8.2.x NMC server:

- To start the NMC Server with a new database, select **Skip the Migration**.

  **Note**

  If you skip the migration, you cannot migrate the database after the update completes.

- To import data from an NMC database that originates from a different NMC 8.1.x or 8.2.x server, select **Migrate the Database Manually.** When you select this option, specify the path to the Unload Database.

  **Note**

  Before you can manually migrate data to a new NMC server, ensure that the Unload Database resides locally on the new NMC server or in a remote location that is accessible to the new NMC server.

- To allow the update to convert and migrate the NMC database on this host, select **Migrate the Database Automatically.** Accept the default directory location or specify a location that has sufficient disk space to store the converted database. To store the converted database, the conversion requires free disk space equal to twice the size of the original database.

18. Click **Upgrade**.
The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the **Complete the Setup** page provides the status of upgrade and a link to the master setup log file.

**Note**

A **Windows installer has stopped working** message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

19. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the **NetWorker Server Selection** page, perform one of the following tasks, and then click OK:

- In the **Enter a server name** field, type the NetWorker Server name and then click **Add**. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
- To add a NetWorker Server that is not listed in the **Available Servers** list:
  a. Type the hostname of the NetWorker Server in the **Enter a server name** text box.
  b. Click **Add**.
- To browse for available NetWorker Servers:
  a. Click **Update List**.
  b. From the **Available Servers** list, select a NetWorker Server.
- To add or remove a NetWorker Server from the **Available Servers** list to the **Selected Servers** list, click the arrow buttons.

The NetWorker_installation_directory\res\servers file contains a list of trusted NetWorker Servers.

**Note**

If you do not select the **Select Backup Server** option, the installation creates an empty **servers** file. When an empty **servers** file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

The first entry in the **servers** file becomes the default NetWorker Server for the host.

20. Click **Finish**.

21. For NetWorker Server installations only, install and configure the EMC Licensing Solution. The *EMC NetWorker Licensing Guide* provides more information.

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**Roadmap for updating NetWorker from 9.0.x on Windows**

Use the following procedures to update and configure the NetWorker and NMC software:

- Updating the NetWorker software
Updating the NetWorker software

Follow these procedures to update the NetWorker software, which includes the NetWorker server, storage node, and client.

Note

The update process will only update existing NetWorker components. You cannot change the installation type during an update. The *EMC NetWorker Installation Guide* describes how to change the installation type and how to add additional NetWorker components.

Preparing the NetWorker server

Before you update the NetWorker server, ensure that the media database and client file indexes are in a consistent state, and that you have a backup of the databases.

Procedure

1. Connect to the NetWorker server as root on UNIX and administrator on Windows, and then open a command prompt.

2. Put the NetWorker databases in a consistent state:
   
   ```
   nsrim -X
   nsrck -m
   nsrck -L6
   ```

3. Record the current location of the NetWorker media database:
   
   ```
   nsrls -m
   ```

4. Record the current location of the NetWorker client file indexes:
   
   ```
   nsrls
   ```

5. Record the range of ports the NetWorker software uses:
   
   ```
   nsrports
   ```

6. Perform a server backup by starting the Server backup workflow.
   
   Ensure that the media pool associated with the backup action has appendable media available.

7. Record the latest bootstrap save set ID (ssid) including the file number, the record number, and the associated volume label.
   
   For example:
   
   ```
   mminfo -B
   date time level ssid file record volume
   10/11/11 16:29:40 full 425437781 0 0 bootstrap_vol.001
   ```

Note

If your NetWorker server and your NMC server are on different hosts, you must update NetWorker on the NetWorker server host before the NMC server host.
In this example:
- The save set ID (ssid) is 4254377781.
- The file number is 0.
- The record number is 0.
- The label of the volume that contains the bootstrap save set is bootstrap_vol.001.

Updating the NetWorker software

On Windows, the procedure to update the NetWorker software depends on the version you are updating to and from.

Each NetWorker version consists of numerical values in the following versioning schema: major.minor.service_pack.hotfix. For example, the 6th cumulative build of NetWorker 9.0 is 9.0.0.6

Consider the following scenarios:
- When you update from a version of the NetWorker software that shares the same service pack number as the newer software version, first remove the older version of the NetWorker software. Once removed, install the new version of the NetWorker server software. For example:
  - When you want to update a NetWorker host from NetWorker 9.0 (9.0.0.0) to cumulative hotfix version 9.0.0.6.
  - When you want to update a NetWorker host from cumulative hotfix version 9.0.0.1 to 9.0.0.6.

The *EMC NetWorker Installation Guide* describes how to remove the previous version of the NetWorker software and install the new version.

- When you update from a version of the NetWorker software that does not share the same service pack number as the newer version, you can use the installation command to update the NetWorker software, without first removing the previous version of the software. For example, when you want to update from NetWorker cumulative hotfix version 8.1.5.1 to NetWorker 9.0.1 (9.0.1.0).

To update the NetWorker software on a host to a version that does not share the same service pack number, review the following sections.

**Updating the NetWorker server software**

You can use the `NetWorker-9.1.0.0.exe` command to update the NetWorker server software without first removing the previous version of the software. When you install the NetWorker Server software, the installation also installs the NetWorker Client, Storage Node, BBB, NetWorker Authentication Service, and Extended Client software.

**Before you begin**

NetWorker supports the Oracle HotSpot and OpenJDK JRE vendors. Before you start the NetWorker Server installation, install the latest version of the 64-bit Java 8 on the host. Before you install the Java software, stop NMC and any NetWorker Server daemons and set the `JAVA_HOME` environment variable.

If the NetWorker server is also the NMC server, you will update both options at the same time. *Updating the NMC server on a NetWorker server* describes how to update the NetWorker server and NMC server software on the same host.
## Procedure

1. Log in to the target host with a user that has administrator privileges.
2. If the NetWorker server is also an NMDA client, remove the NMDA software.
3. Download the NetWorker software package from the EMC Online Support website to a temporary location.
   The package name is `nw91_win_x64.zip`.
4. Extract the NetWorker packages found in `nw91_win_x64.zip` to a temporary location on the target host.
5. In the directory that contains the extracted NetWorker software run `NetWorker-9.1.0.0.exe`.

   **Note**
   While you can run the `NetWorker-9.1.0.0.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in the zip file from a network share, you cannot run the binary until you edit the properties of the file, and then click Unblock.

6. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.
7. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

   **NOTICE**
   If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

8. In the **Wizard Options Page** page, perform the following steps:
   - To install additional language packs, select **Language packs**.
   - To install the License manager server software, select **NetWorker License Manager**.
     The *EMC NetWorker License Manager Installation and Administration Guide* describes how to install and configure the NetWorker License Manager software.
   - To install the Avamar Client software, select **Avamar client**.

   **Note**
   Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

   - (Optional) To install the Avamar software in a location other than the default location, click the **Browse** button (...), and then specify the installation path.

9. Click **Next**. Review the licensing notice that appears, and then click **OK**.
10. (Required) The **Configure NetWorker Authentication Service** page appears in the following scenarios:
    - The default NetWorker Authentication port, 9090 is in use. In the **Apache Tomcat Port** field, type another port number for Tomcat to use, and the click **Next**.
• The default password for the Java Common Truststore on the host is not the default password (changeit). When the password is not changeit, the installation displays a JRE Certificate Store Error window. Click Ok, and then in the Trust store password field, type the password for the Java Common Truststore, and then click Next.

11. Click Upgrade.

The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the Complete the Setup page provides the status of upgrade and a link to the master setup log file.

Note

A Windows installer has stopped working message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

12. (Optional) In the Complete the Setup page, to define a list of NetWorker Servers that have client-tasking rights to this host, click Select Backup Server. Client-tasking rights include the ability to back up the host. In the NetWorker Server Selection page, perform one of the following tasks, and then click OK:

• In the Enter a server name field, type the NetWorker Server name and then click Add. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.

• To add a NetWorker Server that is not listed in the Available Servers list:
  a. Type the hostname of the NetWorker Server in the Enter a server name text box.
  b. Click Add.

• To browse for available NetWorker Servers:
  a. Click Update List.
  b. From the Available Servers list, select a NetWorker Server.

• To add or remove a NetWorker Server from the Available Servers list to the Selected Servers list, click the arrow buttons.

The NetWorker_installation_directory\res\servers file contains a list of trusted NetWorker Servers.

Note

If you do not select the Select Backup Server option, the installation creates an empty servers file. When an empty servers file exists on a host, any NetWorker Server has client-tasking rights to the host. The EMC NetWorker Administration Guide provides more information about client-tasking rights.

The first entry in the servers file becomes the default NetWorker Server for the host.

13. Click Finish.

Updating the NetWorker storage node software

You can use the `NetWorker-9.1.0.0.exe` command to update the NetWorker storage node software without first removing the previous version of the software. The NetWorker Storage Node update process also installs the NetWorker Client and Extended Client software.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Obtain the NetWorker software package from the EMC Online Support Site.
3. Extract the NetWorker packages found in `nw91_win_x64.zip` to a temporary location on the target host.
4. For NMDA and NMM clients only, remove the NetWorker module software.
5. In the directory that contains the extracted NetWorker software run `NetWorker-9.1.0.0.exe`.

**Note**

While you can run the `NetWorker-9.1.0.0.exe` from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in the zip file from a network share, you cannot run the binary until you edit the properties of the file, and then click Unblock.

6. In the **Wizard Welcome** page, select **I agree to the license terms and agreements**, and then click **Next**.
7. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

**NOTICE**

If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

8. In the **Wizard Options Page** page, perform the following steps:
   - To install the Avamar Client software, select **Avamar client**.
     **Note**
     Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.
   - *(Optional)* To install the Avamar software in a location other than the default location, click the **Browse** button (...), and then specify the installation path.

9. Click **Upgrade**.

The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the **Complete the Setup** page provides the status of upgrade and a link to the master setup log file.
A Windows installer has stopped working message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

10. (Optional) In the Complete the Setup page, to define a list of NetWorker Servers that have client-tasking rights to this host, click Select Backup Server. Client-tasking rights include the ability to back up the host. In the NetWorker Server Selection page, perform one of the following tasks, and then click OK:

- In the Enter a server name field, type the NetWorker Server name and then click Add. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
- To add a NetWorker Server that is not listed in the Available Servers list:
  a. Type the hostname of the NetWorker Server in the Enter a server name text box.
  b. Click Add.
- To browse for available NetWorker Servers:
  a. Click Update List.
  b. From the Available Servers list, select a NetWorker Server.
- To add or remove a NetWorker Server from the Available Servers list to the Selected Servers list, click the arrow buttons.

The NetWorker_installation_directory\res\servers file contains a list of trusted NetWorker Servers.

11. Click Finish.

Updating the NetWorker Client software

Perform the following steps to update a NetWorker client. EMC recommends that you use the lgtoclnit-9.1.0.0.exe package to install the NetWorker software on a client host.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. Obtain the NetWorker software package from the EMC Online Support Site.
3. Extract the NetWorker packages found in the nw_win_x64.zip or nw_win_x86.zip file, to a temporary location on the target host.
4. For NMDA and NMM clients only, remove the NetWorker module software.
5. In the directory that contains the extracted NetWorker packages, run lgtoclnit-9.1.0.0.exe.
6. In the **Wizard Welcome** page, select *I agree to the license terms and agreements*, and then click **Next**.

7. On the **Change Install location** window, click **Next**.

8. (Optional) On the **Configuration Checks Options** page, select **Run System Configuration Checker**, and then click **Check**.

   The installation analyzes the host and displays status information in the **Results of Configuration Checks** page. Select **Open Detailed Report** to review detailed information about the configuration checks, and then click **Next**.

**Note**

   The Configuration Checker option only appears in the Base Client Installation Wizard.

9. In the **Configure Windows Firewall** page, select **Configure the Windows firewall**, and then click **Next**.

   **NOTICE**

   If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

10. On the **Wizard Options** page, perform the following steps:

    - To install the Avamar Client software, select **Avamar client**.

      **Note**

      Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

    - (Optional) To install the Avamar software in a location other than the default location, click the **Browse** button (…), and then specify the installation path.

11. Click **Upgrade**.

    The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the **Complete the Setup** page provides the status of upgrade and a link to the master setup log file.

    **Note**

    A **Windows installer has stopped working** message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

12. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the **NetWorker Server Selection** page, perform one of the following tasks, and then click **OK**:

    - In the **Enter a server name** field, type the NetWorker Server name and then click **Add**. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.

    - To add a NetWorker Server that is not listed in the **Available Servers** list:
      a. Type the hostname of the NetWorker Server in the **Enter a server name** text box.
b. Click Add.

- To browse for available NetWorker Servers:
  a. Click Update List.
  b. From the Available Servers list, select a NetWorker Server.
- To add or remove a NetWorker Server from the Available Servers list to the Selected Servers list, click the arrow buttons.

The NetWorker_installation_directory\res\servers file contains a list of trusted NetWorker Servers.

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**Note**

If you do not select the Select Backup Server option, the installation creates an empty servers file. When an empty servers file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

The first entry in the servers file becomes the default NetWorker Server for the host.

13. To complete the installation, click Finish.

**Updating the NetWorker Extended Client software**

Perform the following steps to update the NetWorker Extended Client software.

**Procedure**

1. Log in to the target host with a user that has administrator privileges.
2. Obtain the NetWorker software package from the EMC Online Support Site.
3. Extract the NetWorker packages found in the *nw_win_x64.zip* or *nw_win_x86.zip* file, to a temporary location on the target host.
4. In the directory that contains the extracted NetWorker packages, run lgtoxtdc1nt-9.1.0.0.exe
5. On the Wizard Welcome window, select I agree to the license terms and agreements, and then click Upgrade.

The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the Complete the Setup page provides the status of upgrade and a link to the master setup log file.

**Note**

A Windows installer has stopped working message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

6. Click Finish.

**Updating the NMC server**

Use the NetWorker-9.1.0.0.exe file to update the NMC server software.
Performing a manual backup of the NMC server database

Use the `savepsm` command to perform a manual backup of the NMC server database.

UNIX man page and the *EMC NetWorker Command Reference Guide* provides detailed information about the `savepsm` command.

**Procedure**

1. For Linux hosts, if you did not install NMC server software in the default path `/opt/lgtonmc`, then add the `NMC_install_dir/bin` directory to the `LD_LIBRARY_PATH` environment variable.
2. From a command prompt, use the `savepsm` command to backup the NMC database

   ```
   savepsm staging_directory
   ```

   where `staging_directory` is the location that the backup uses to temporarily store a copy of the NMC database for backup.

   For example, on windows, type:

   ```
   savepsm e:\nmcdx\stage
   ```

Updating the NMC server on a NetWorker client or storage node

Perform the following steps to update the NMC server software on a NetWorker client or storage node.

**Before you begin**

Perform a NMC server backup, by starting the NMC server backup workflow.

**Note**

Ensure that the media pool associated with the backup action has appendable media available.

**Procedure**

1. Log in to the target host with a user that has administrator privileges.
2. If the NetWorker server is also an NMDA client, remove the NMDA software.
3. Download the NetWorker software package from the EMC Online Support website to a temporary location.
   
   The package name is `nw91_win_x64.zip`.
4. Extract the NetWorker packages found in `nw91_win_x64.zip` to a temporary location on the target host.
5. In the directory that contains the extracted NetWorker software run

   ```
   NetWorker-9.1.0.0.exe
   ```
Note

While you can run the NetWorker-9.1.0.0.exe from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in the zip file from a network share, you cannot run the binary until you edit the properties of the file, and then click Unblock.

6. In the Wizard Welcome page, select I agree to the license terms and agreements, and then click Next.

7. In the Configure Windows Firewall page, select Configure the Windows firewall, and then click Next.

**NOTICE**

If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

8. In the Wizard Options Page page, perform the following steps:
   - To install additional language packs, select Language packs.
   - To install the License manager server software, select NetWorker License Manager.
     The EMC NetWorker License Manager Installation and Administration Guide describes how to install and configure the NetWorker License Manager software.
   - To install the Avamar Client software, select Avamar client.

**Note**

Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

- (Optional) To install the Avamar software in a location other than the default location, click the Browse button (...), and then specify the installation path.

9. Click Next. Review the licensing notice that appears, and then click OK.

10. In the NMC Options page, perform the following steps:
   a. (Optional) Type the path to install the NMC Server software.

      **The default location is:** C:\Program Files\EMC NetWorker Management

   b. When the host is not a NetWorker server, in the Authentication Host field, type the name of one of the NetWorker 9.1.x servers that the NMC Server will manage. Ensure NetWorker services are started on the NetWorker server.

      The NetWorker Server that you specify authenticates access to the NMC Server. When you log in to the NMC Server, you will specify a username and password that the NetWorker Authentication Service on the NetWorker Server can validate.

   c. When the host is not a NetWorker server, in the Authentication Port field, type the port number used by the NetWorker Authentication Service. The default port number is 9090.
d. Click Next.

11. (Optional) In the NMC Database Options page, modify the following configuration options, and then click Next:
   - **Database Destination Folder.** The default location is "C:\Program Files \EMC NetWorker\Management\nmcdb"
   - **Client Service port.** The default port is 9001.

   **Note**
   To use different port numbers, type the new port numbers (between 1024 and 49151). Do not use port numbers that are in use. For example: The NMC server uses port 5432 for TDS protocol communications with the NMC database. The preferred port for the EMC Data Protection Advisor (DPA) product is 9002.
   - **Web server port.** This port is used by the embedded HTTP server. The default port is 9000.

12. In the NMC Database Maintenance page, select Overwrite the existing NetWorker Management Console server database, to start the NMC Server with a new database, or leave the default selection Keep the existing database.

13. Click Upgrade.
   The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the Complete the Setup page provides the status of upgrade and a link to the master setup log file.

   **Note**
   A Windows installer has stopped working message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

14. (Optional) In the Complete the Setup page, to define a list of NetWorker Servers that have client-tasking rights to this host, click Select Backup Server. Client-tasking rights include the ability to back up the host. In the NetWorker Server Selection page, perform one of the following tasks, and then click OK:
   - In the Enter a server name field, type the NetWorker Server name and then click Add. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.
   - To add a NetWorker Server that is not listed in the Available Servers list:
     a. Type the hostname of the NetWorker Server in the Enter a server name text box.
     b. Click Add.
   - To browse for available NetWorker Servers:
     a. Click Update List.
     b. From the Available Servers list, select a NetWorker Server.
   - To add or remove a NetWorker Server from the Available Servers list to the Selected Servers list, click the arrow buttons.

   The NetWorker_installation_directory\res\servers file contains a list of trusted NetWorker Servers.
Note

If you do not select the Select Backup Server option, the installation creates an empty servers file. When an empty servers file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

The first entry in the servers file becomes the default NetWorker Server for the host.

15. Click Finish.

Updating the NMC server on a NetWorker server

Perform the following steps to update the NMC server software on a host that is also the NetWorker server.

Before you begin

Perform a NMC server backup, by starting the NMC server backup workflow.

Note

Ensure that the media pool associated with the backup action has appendable media available.

Procedure

1. Log in to the target host with a user that has administrator privileges.
2. If the NetWorker server is also an NMDA client, remove the NMDA software.
3. Download the NetWorker software package from the EMC Online Support website to a temporary location.
   
   The package name is nw91_win_x64.zip.
4. Extract the NetWorker packages found in nw91_win_x64.zip to a temporary location on the target host.
5. In the directory that contains the extracted NetWorker software run NetWorker-9.1.0.0.exe.

Note

While you can run the NetWorker-9.1.0.0.exe from a network location, to lessen the installation time, copy the file to a location that is local to the target host. If you used Windows Explorer to copy the files in the zip file from a network share, you cannot run the binary until you edit the properties of the file, and then click Unblock.

6. In the Wizard Welcome page, select I agree to the license terms and agreements, and then click Next.
7. In the Configure Windows Firewall page, select Configure the Windows firewall, and then click Next.
NOTICE

If you do not configure the firewall to allow inbound and outbound NetWorker software traffic, scheduled backups might fail.

8. In the **Wizard Options Page** page, perform the following steps:
   - To install additional language packs, select **Language packs**.
   - To install the License manager server software, select **NetWorker License Manager**.
     The *EMC NetWorker License Manager Installation and Administration Guide* describes how to install and configure the NetWorker License Manager software.
   - To install the Avamar Client software, select **Avamar client**.

   **Note**

   Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

   - (Optional) To install the Avamar software in a location other than the default location, click the **Browse** button (...), and then specify the installation path.

9. Click **Next**. Review the licensing notice that appears, and then click **OK**.

10. In the **Configure NetWorker Authentication Service** page, perform the following steps, and then click **Next**.
    - If a Java pop-up appears, review the information, and then click **OK** to continue with the update or click **Cancel** to stop the update.
    - The default password for the Java Common Truststore on the host is not the default password (*changeit*). When the password is not *changeit*, the installation displays a **JRE Certificate Store Error** window. Click **Ok**, and then in the **Trust store password** field, type the password for the Java Common Truststore, and then click **Next**.

11. In the **Configure NetWorker Authentication Service Keystore** page, select **Use an existing keystore**, type the keystore password, and then click **Next**.

12. In the **NMC Options** page, perform the following steps:
    a. (Optional) Type the path to install the NMC Server software.
       
       The default location is: `C:\Program Files\EMC NetWorker\Management`
    b. When the host is not a NetWorker server, in the **Authentication Host** field, type the name of one of the NetWorker 9.1.x servers that the NMC Server will manage. Ensure NetWorker services are started on the NetWorker server.
       
       The NetWorker Server that you specify authenticates access to the NMC Server. When you log in to the NMC Server, you will specify a username and password that the NetWorker Authentication Service on the NetWorker Server can validate.
    c. When the host is not a NetWorker server, in the **Authentication Port** field, type the port number used by the NetWorker Authentication Service. The default port number is 9090.
d. Click **Next**.

13. (Optional) In the **NMC Database Options** page, modify the following configuration options, and then click **Next**:

- **Database Destination Folder.** The default location is "C:\Program Files \EMC NetWorker\Management\nmcdb"

- **Client Service port.** The default port is 9001.

  **Note**
  To use different port numbers, type the new port numbers (between 1024 and 49151). Do not use port numbers that are in use. For example: The NMC server uses port 5432 for TDS protocol communications with the NMC database. The preferred port for the EMC Data Protection Advisor (DPA) product is 9002.

- **Web server port.** This port is used by the embedded HTTP server. The default port is 9000.

14. In the **NMC Database Maintenance** page, select **Overwrite the existing NetWorker Management Console server database**, to start the NMC Server with a new database, or leave the default selection **Keep the existing database**.

15. Click **Upgrade**.

   The Upgrade progress bar appears and you might see the progress window for several minutes. When the upgrade completes, the **Complete the Setup** page provides the status of upgrade and a link to the master setup log file.

   **Note**
   A **Windows installer has stopped working** message might appear during the update on some hosts with certain versions of the MSI installer. If you see this message, close the window and allow the update to complete.

16. (Optional) In the **Complete the Setup** page, to define a list of NetWorker Servers that have client-tasking rights to this host, click **Select Backup Server**. Client-tasking rights include the ability to back up the host. In the **NetWorker Server Selection** page, perform one of the following tasks, and then click **OK**:

   - In the **Enter a server name** field, type the NetWorker Server name and then click **Add**. It is recommended that you specify both the short name and the full name of the NetWorker Server to avoid DNS issues.

   - To add a NetWorker Server that is not listed in the **Available Servers** list:
     a. Type the hostname of the NetWorker Server in the **Enter a server name** text box.
     b. Click **Add**.

   - To browse for available NetWorker Servers:
     a. Click **Update List**.
     b. From the **Available Servers** list, select a NetWorker Server.

   - To add or remove a NetWorker Server from the **Available Servers** list to the **Selected Servers** list, click the arrow buttons.

   The **NetWorker_installation_directory\res\servers** file contains a list of trusted NetWorker Servers.
**Note**

If you do not select the **Select Backup Server** option, the installation creates an empty `servers` file. When an empty `servers` file exists on a host, any NetWorker Server has client-tasking rights to the host. The *EMC NetWorker Administration Guide* provides more information about client-tasking rights.

The first entry in the `servers` file becomes the default NetWorker Server for the host.

17. Click **Finish**.
CHAPTER 5

Updating NetWorker for UNIX

This chapter includes the following topics:

- Roadmap for updating NetWorker Client and Storage Node on UNIX...............102
- Updating NetWorker on AIX................................................................. 102
- Updating NetWorker on HP-UX......................................................... 104
- Updating NetWorker on Solaris......................................................... 107
- NMC server considerations..............................................................111
Roadmap for updating NetWorker Client and Storage Node on UNIX

When you update the NetWorker client or storage node software, you must remove the previous version of the NetWorker software, then install the newer version.

The procedures outlined in this section apply to AIX, HP-UX, and Solaris.

Note

NetWorker 9.1 does not support an HP-UX, Solaris or AIX NetWorker server. You cannot update a NetWorker server that runs on these operating systems to NetWorker 9.1. To migrate your NetWorker server data from an HP-UX, Solaris, or AIX NetWorker server to a supported Windows or Linux host, contact EMC Sales for more information about engaging EMC Professional Services to perform a cross platform migration.

Updating NetWorker on AIX

The following sections describe how to update the NetWorker client and storage node software on an AIX host.

Uninstalling the previous version of NetWorker

Use the following procedure to uninstall the NetWorker software.

Procedure

1. Before you remove the NetWorker software, remove the NetWorker module software including the NMDA, NMSAP, NMM, and the NetWorker PowerSnap module. The module installation guide describes how to uninstall the module software.
2. Uninstall NetWorker. The EMC NetWorker Installation Guide describes how to uninstall the NetWorker software.
3. Delete the /nsr/tmp directory.

Installing the NetWorker software

The following section describes how to install the NetWorker Client, NetWorker Storage Node, and optional software, such as, the man pages and language packs on an AIX host.

The following table lists the software packages that are required for each installation type.

Table 18 List of NetWorker packages required for each installation type

<table>
<thead>
<tr>
<th>Installation type</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client software</td>
<td>LGTOnw.clnr.rte</td>
</tr>
<tr>
<td>Extended client software</td>
<td>LGTOnw.xtdclnt.rte</td>
</tr>
</tbody>
</table>
Table 18 List of NetWorker packages required for each installation type (continued)

<table>
<thead>
<tr>
<th>Installation type</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Node software</td>
<td>LGTOnw.clint.rte</td>
</tr>
<tr>
<td></td>
<td>LGTOnw.xtdclnt.rte</td>
</tr>
<tr>
<td></td>
<td>LGTOnw.node.rte</td>
</tr>
<tr>
<td>Man pages</td>
<td>LGTOnw.man.rte</td>
</tr>
<tr>
<td>Simplified Chinese language support</td>
<td>LGTOnw.zh.rte</td>
</tr>
<tr>
<td>French language support</td>
<td>LGTOnw.fr.rte</td>
</tr>
<tr>
<td>Japanese language support</td>
<td>LGTOnw.ja.rte</td>
</tr>
<tr>
<td>Korean language support</td>
<td>LGTOnw.ko.rte</td>
</tr>
</tbody>
</table>

Procedure

1. Log in to the target host as root.
2. Create a backup copy of the operating system configuration files, by typing the following commands:
   
   ```
   cp /etc/rpc /etc/rpc.orig
   cp /etc/inittab /etc/inittab.orig
   ```

3. Download the NetWorker software package from the EMC Online Support website to a temporary location.
   The package name is `nw91_aixpower.tar.gz`. The compressed package size is 204 MB and the uncompressed size is 674 MB.

4. Change to the temporary location that contains the software package, and then unzip and extract the files by typing the `tar` command.
   For example:
   
   ```
   tar -xzf file_name.tar.gz
   ```

5. Install the NetWorker software from the command prompt, by using the `installp` program.
   For example:
   
   ```
   installp -a -d /dir_pathname package [package]...
   ```

   where:

   - `/dir_pathname` is the complete pathname of the directory that contains the installation software.
     For example, if you extract the NetWorker software packages to the `/software` directory, the `dir_pathname` is `/software/aixpower`.
   - `package [package]...` is a list of the software package names that are required for the installation type.
     For example, to install the NetWorker storage node software, the man pages, and the Japanese language pack, type:
installp -a -d/nw_packages/aixpower LGTOnw.clnt.rte
LGTOnw.node.rte LGTOnw.man.rte LGTOnw.ja.rte

6. Confirm that you successfully installed the required packages for each installation by typing the following command:

    lslpp -L all | grep -i lgto*

Installing the Avamar client

If the host used Avamar 7.2 or earlier as a data protection target on a previous version of NetWorker, install the Avamar client.

The *EMC Avamar 7.2 Backup Clients User Guide* provides more information about how to use the Avamar Client software.

Procedure

1. Log in to the host as root.
2. Type the following command:

    installp -R path -d /package all

   where:

   - *path* is the directory for the installation files.
   - *package* is the install package filename

   For example:

    installp -R /nw/90/aixpower -d AvamarClient-aix6-
    ppc-7.2.100-401.bff all

   The output indicates that the installation completes successfully.

3. Optional, to verify the installation, type:

    lslpp_r -R ALL -l | grep -i avam

   Output similar to the following should appear:

   AvamarClient-aix6-ppc 7.2.100.401 COMMITTED EMC Avamar
client 7.2.100-401

**Updating NetWorker on HP-UX**

The following sections describe how to update the NetWorker software on an HP-UX system.

**Uninstalling the previous version of NetWorker**

Use the following procedure to uninstall the NetWorker software.

Procedure

1. Before you remove the NetWorker software, remove the NetWorker module software including the NMDA, NMSAP, NMM, and the NetWorker PowerSnap module. The module installation guide describes how to uninstall the module software.
2. Uninstall NetWorker. The *EMC NetWorker Installation Guide* describes how to uninstall the NetWorker software.

3. Delete the `/nsr/tmp` directory.

**HP-UX: Installing the NetWorker client and storage node software**

Use the `swinstall` utility to install the client, storage node, and optional packages, such as the man pages and language packs, on HP-UX 11.x, or HP-UX 11i platforms on IPF.

The `swinstall` utility uses the character mode or the System Administration Manager (SAM) utility. The character mode `swinstall` utility screens contain the same information as the SAM utility. The same choices are made with both formats.

The following table summarizes the NetWorker software packages that each NetWorker component requires.

<table>
<thead>
<tr>
<th>NetWorker component</th>
<th>Software packages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client software</td>
<td>NWr-Client</td>
</tr>
<tr>
<td>Extended client software</td>
<td>NWr-XtdClient</td>
</tr>
<tr>
<td>Storage node software</td>
<td>NWr-Client</td>
</tr>
<tr>
<td></td>
<td>NWr-XtdClient</td>
</tr>
<tr>
<td></td>
<td>NWr-Node</td>
</tr>
<tr>
<td>Man pages</td>
<td>NWr-Man</td>
</tr>
<tr>
<td>French language support</td>
<td>NWr-FR</td>
</tr>
<tr>
<td>Japanese language support</td>
<td>NWr-JA</td>
</tr>
<tr>
<td>Korean language support</td>
<td>NWr-KO</td>
</tr>
<tr>
<td>Simplified Chinese language support</td>
<td>NWr-ZH</td>
</tr>
</tbody>
</table>

Follow these steps to install the NetWorker client and storage node software.

**Procedure**

1. Create a backup copy of the `rpc.org` configuration file, by typing the following command:

   ```bash
   cp /etc/rpc /etc/rpc.org
   ```

2. Log in to the target host as root.

3. Download the NetWorker software package from the [EMC Online Support](https://www.emc.com/support) website to a temporary location.
Note

Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files. The "Package Requirements" section provides more information about package sizes and the package name that applies to each operating system.

The following table provides you with information about the size of the compressed and uncompressed files, and the name of the package to install on each operating system.

Table 20 Size of compressed and uncompressed files

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Package name</th>
<th>Compressed file</th>
<th>Uncompressed file</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP-UX</td>
<td>nw91_hpu11_64.tar.gz</td>
<td>114 MB</td>
<td>340 MB</td>
</tr>
<tr>
<td>HP-UX Itanium</td>
<td>nw91_hpu11_ia64.tar.gz</td>
<td>199 MB</td>
<td>860 MB</td>
</tr>
</tbody>
</table>

4. Change to the temporary location that contains the software package, and then unzip and extract the files by typing the \texttt{tar} command.

For example:

\texttt{tar -xzf file_name.tar.gz}

5. At the command prompt, type:

\texttt{swinstall &}

Note

If you use character mode, do not include the \& symbol.

6. Press Enter.

7. On the \textbf{Specify Source} window, provide the location of the NetWorker installation files:

a. In the \textbf{Source Depot Type} field, press Enter and select \textbf{Local Directory}.

b. In the \textbf{Source Host Name} field, ensure that the hostname of the target host is selected.

c. In the \textbf{Source Depot Path} field, type the full path of the NetWorker.pkg file.

For example:

\texttt{/tmp/hpux11_ia64/NetWorker.pkg}

8. Click OK.

9. On the \textbf{SD Install - Software Selection} window, select and mark the software packages that are required for the installation type.

(Optional) Select \textbf{Avamar client} to install the Avamar client software.
**Note**

Select this option only when you update NetWorker 8.1.x or 8.2.x hosts that use an Avamar 7.2 or earlier system as a data protection target.

10. Press Enter.
11. From the Actions menu, click Install.
12. Verify the status of the install analysis, and then perform the following tasks:
   - To review the log file and verify that the swinstall program did not encounter errors, click Logfile.
   - Correct any problems before you continue the installation.
13. To continue with the installation, click OK.
14. To review the log file for error or warning messages that are generated during installation, click Logfile.
15. When the installation completes, click Done.
16. Exit swinstall.
17. (Optional) Verify that NetWorker installed correctly, by typing the following at the command prompt:

```
swlist | grep -i networker
```

Output similar to the following should appear:

```
NetWorker 9.1 NetWorker
```

18. (Optional) Verify that the Avamar client installed correctly, by typing the following at the command prompt:

```
swlist | grep -i avamar
```

Output similar to the following should appear:

```
hpuxclnt 7.2.100-401 Avamar client
```

### Updating NetWorker on Solaris

The following sections describe how to update the NetWorker software on Solaris systems.

### Uninstalling the previous version of NetWorker

Use the following procedure to uninstall the NetWorker software.

**Procedure**

1. Before you remove the NetWorker software, remove the NetWorker module software including the NMDA, NMSAP, NMM, and the NetWorker PowerSnap module. The module installation guide describes how to uninstall the module software.
2. Uninstall NetWorker. The *EMC NetWorker Installation Guide* describes how to uninstall the NetWorker software.
3. Delete the /nsr/tmp directory.

Installing the NetWorker Client and Storage Node packages

This section describes how to install the NetWorker Client and Storage Node software packages and the optional packages, for example, the man pages, extended client, and language packs.

Procedure

1. Log in to the target host as root.

2. Download the NetWorker software package from the EMC Online Support website to a temporary location.

   Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files.

   The following table provides you with information about the size of the compressed and uncompressed files, and the name of the package to install on each operating system.

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Package names</th>
<th>Compressed file size</th>
<th>Uncompressed file size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solaris x86</td>
<td>nw91_solaris_x86.tar.gz</td>
<td>71 MB</td>
<td>244 MB</td>
</tr>
<tr>
<td>Solaris 64-bit SPARC</td>
<td>nw91_solaris_64.tar.gz</td>
<td>219 MB</td>
<td>621 GB</td>
</tr>
<tr>
<td>Solaris x64/AMD64</td>
<td>nw91_solaris_amd64.tar.gz</td>
<td>150 MB</td>
<td>523 MB</td>
</tr>
</tbody>
</table>

3. Change to the temporary location that contains the software package, and then unzip and extract the files by typing the `tar` command.

   For example:

   ```
   tar -xzf file_name.tar.gz
   ```

4. Create a backup copy of the `rpc.org` configuration file, by typing the following command:

   ```
   cp /etc.rpc /etc.rpc.org
   ```

5. Display the list of available installation packages, by typing the following command:

   ```
   pkgadd -d path_to_install_files
   ```

   The following packages are available:

   1 LGTOcint NetWorker Client (sparc) 9.1.0.0.Build.xxx
   2 LGTOfr NetWorker French Language Pack (sparc) 9.1.0.0.xxx
   3 LGTOja NetWorker Japanese Language Pack (sparc) 9.1.0.0.xxx
   4 LGTOko NetWorker Korean Language Pack (sparc) 9.1.0.0.xxx
   5 LGTOlicm NetWorker License Manager(sparc) 9.1.0.0.xxx
6. Specify the package numbers that are required for the installation type.

NOTICE

When installing the NetWorker Server and Storage Node software, the package order is important.

For example:

- For a NetWorker Client installation, type: 1
- For a NetWorker Storage Node installation, type: 1, 7

You can specify optional packages, including language packs, man pages, and the Extended Client, at the Select package prompt. Type the optional package numbers after the required package numbers.

For example:

To install the man pages and extended client during a NetWorker Storage Node install, type: 1, 7, 6, 8

7. When prompted to change the data directory, choose one of the following options:

- Accept the default directory.
- Specify the directory.

8. The installation prompts you to specify the NetWorker Server that can access the host. To update the list:

a. Type y.

b. Specify the shortname and FQDN for each NetWorker Server, one per line, that requires access to the NetWorker host. The first entry in this file becomes the default NetWorker Server.

   When all the NetWorker Servers are specified, press Enter without specifying a NetWorker Server name, to complete the process.

   For example:

   Enter a NetWorker server hostname [no more]: mynwserver
   Enter a NetWorker server hostname [no more]: mynwserver.emc.com
   Enter a NetWorker server hostname [no more]:

   NOTICE

   When no servers are specified, any NetWorker Server can back up or perform a directed recovery to the host.

9. After the client package installation completes, the installation process automatically installs any additional packages.
Note
For Storage Node installations, do not start the NetWorker daemons after the client package installation completes. Start the daemons when the installation process prompts you during the LGTOnode package installation.

10. To confirm that the NetWorker daemons started successfully, type `ps -ef | grep nsr`.

Installing the Avamar client

If the host used Avamar 7.2 and earlier system as a data protection target on a previous version of NetWorker, install the Avamar client.

The *EMC Avamar 7.2 Backup Clients User Guide* provides more information about how to use the Avamar Client software.

**Procedure**

1. Log in to the host as root.
2. From a command prompt, use the `pkgadd` command to install the Avamar client.

   ```
   pkgadd -d /dir_pathname/AvamarClient-solaris10-sparc-7.2.xxx-xxx.pkg
   ```

   where:
   - `/dir_pathname/` is the complete pathname of the directory that contains the NetWorker and Avamar installation software.
   - `xxx.xxx` is the version of the Avamar client.

   For example:

   ```
   pkgadd -d AvamarClient-solaris10-sparc-7.2.100-325.pkg
   ```

   The following packages are available:

   1 AVMRclnt Avamar Client(sparc) 7.2.100-325

   Select package(s) you wish to process (or 'all' to process all packages). (default: all) [?,??,q]:

   3. Press Enter to install the package.

   4. In the **Relocate install from /opt/AVMRclnt? [n]** prompt, press Enter to accept the default location or type `Y` to change the location. If you choose to relocate the install, specify the path, and press Enter.

   5. In the **On the Directory to locate cache & log files [/var/avamar]:** prompt, type the path or press Enter to accept the default location `/var/avamar`.

   6. In the **Do you want to continue with the installation of <AVMRclnt> [y,n,?]** prompt, type `Y` to install the client software.

**Results**

The installation process installs the Avamar client software in the `/opt/AVMRclnt` directory.
NMC server considerations

NMC server 9.1 does not support the Solaris, HP-UX, or AIX operating systems. You cannot update an 8.2.x and earlier NMC server on Solaris, HP-UX, or AIX.

Preparing the NMC server

Before you update the NMC server software from an 8.1.x or 8.2.x release, perform a manual backup of the NMC server database, and then convert the NMC database.

Performing a manual backup of the NMC database on AIX

Perform the following steps to back up the NMC database.

Procedure

1. Set the LIBPATH environment variable to `NMC_install_dir/sybasa/lib64`.

   The default NMC installation directory is `/opt/lgtonmc`

2. Use the `savepsm` command to perform the backup.

   ```bash
   savepsm -I "NMC_install_dir" -b pool_name
   ```

   where `NMC_install_dir` is the NMC server installation directory.

   Note

   If the installation directory path contains spaces, then enclose the path in quotations.

   The *EMC NetWorker Command Reference Guide* or the UNIX man pages provides information about the `savepsm` command.

Performing a manual backup of the NMC database on HP-UX

Perform the following steps to back up the NMC database.

Procedure

1. Set the LIBPATH environment variable to `NMC_install_dir/sybasa/lib64`.

   The default NMC installation directory is `/opt/lgtonmc`

2. Use the `savepsm` command to perform the backup.

   ```bash
   savepsm -I "NMC_install_dir" -b pool_name
   ```

   where `NMC_install_dir` is the NMC server installation directory.

   Note

   If the installation directory path contains spaces, then enclose the path in quotations.

   The *EMC NetWorker Command Reference Guide* or the UNIX man pages provides information about the `savepsm` command.
Performing a manual backup of the NMC database on Solaris

Perform the following steps to back up the NMC database.

**Procedure**

1. Set the `LD_LIBRARY_PATH` environment variable to `NMC_install_dir/sybasalib64`.

   The default NMC installation directory is `/opt/LGTOnmc`.

2. Use the `savepsm` command to perform the backup.

   ```
   savepsm -I "NMC_install_dir" -b pool_name
   ```

   where `NMC_install_dir` is the NMC server installation directory.

   **Note**

   If the installation directory path contains spaces, then enclose the path in quotations.

   The *EMC NetWorker Command Reference Guide* or the UNIX man pages provides information about the `savepsm` command.

Preparing the NMC database

The NMC database in 9.1.x is a Postgres database. NetWorker server 8.2.x and earlier uses a Sybase database.

Perform the following steps to convert the Sybase database into an Unload Database. The upgrade process will prompt you for the location of the converted files, and then import the Unload Database into a Postgres database.

**Note**

To update the NMC server without converting the database, use the `touch` command to create the `/opt/lgtonmc/logs/dbunloaded.tag` file.

**Procedure**

1. Stop the NetWorker and NMC daemons, by typing the following command:

   ```
   /etc/init.d/networker stop
   /etc/init.d/gst stop
   ```

2. Copy the `gstdbunload` file from the directory to which you extracted the NetWorker 9.1.x software, into the `installation_path/bin` folder on the NMC server. By default, the `installation_path` is in the following location:

   - AIX, HP-UX, and Linux: `/opt/lgtonmc`
   - Solaris: `/opt/LGTONMC`

3. Create a directory that will contain the Unload Database files. Specify a location that has sufficient disk space to store the converted database. To store the Unload Database files, the conversion process requires free disk space equal to 1.5 times the size of the original database.
The update process creates a new user for the Postgres database, and uses this new user to read the contents of the directory that contains the Unload Database. Ensure that everyone has execute level permissions to the directory and the directory contents.

4. From a command prompt, in the `installation_path/bin` folder, type the following command:

```
./gstdbunload
target_conversion_dir
```

where `target_conversion_dir` is the directory that you created in the previous step.

Note

If the the NMC daemons are running the database conversion process fails with an error messages similar to the following:


To resolve this issue, stop the NMC daemons and run the `gstdbunload` command again.

The status of the conversion appears in stdout and in the `target_conversion_dir/reload.log` file.

5. For pre-9.1.x Solaris, HP-UX, and AIX NMC servers only, copy the `target_conversion_dir` to the target Windows or Linux NMC server.
CHAPTER 6

Updating NetWorker for OS-X

This chapter describes how to update the NetWorker software for OS-X. This chapter includes the following topics:

- Roadmap for updating NetWorker client software on OS-X.......................... 116
- Uninstalling the previous version of NetWorker............................................. 116
- Installing the NetWorker Client from the Mac Console................................ 116
Roadmap for updating NetWorker client software on OS-X

When you update the NetWorker client software, remove the previous version of the NetWorker software, then install the newer version.

**Note**

OS-X only supports updating the NetWorker client software.

Uninstalling the previous version of NetWorker

Use the following procedure to uninstall the NetWorker software.

**Procedure**

1. Before you remove the NetWorker software, remove the NetWorker module software including the NMDA, NMSAP, NMM, and the NetWorker PowerSnap module. The module installation guide describes how to uninstall the module software.
2. Uninstall NetWorker. The *EMC NetWorker Installation Guide* describes how to uninstall the NetWorker software.
3. Delete the `/nsr/tmp` directory.

Installing the NetWorker Client from the Mac Console

Complete the following procedure to install the NetWorker Client software from the Mac Console.

**Procedure**

1. Download the NetWorker software package from the EMC Online Support website to a temporary location.
   
   The package name is `nw91_macosx.dmg`.

   **Note**

   Ensure that sufficient disk space exists on the host to contain both the compressed NetWorker software package and the uncompressed files.

2. Double-click the `nw91_macosx.dmg` file.

   This action mounts the NetWorker software on a NetWorker volume.

3. Double-click the `nw91_macosx.pkg` on the NetWorker volume to launch the NetWorker software.

4. On the Welcome to the NetWorker Client Installer window, click Continue.

5. On the End User License and Basic Maintenance Agreement window, click Continue.

6. Click Agree to agree to the terms of the software license agreement.

7. Click Install to install the NetWorker client on the default volume.

   *(Optional) Click Change Install Location... and select another volume.*
8. Click **Close**.
PART 3

Updating Methods

Refer to the following chapters to update from a 32-bit version of the NetWorker software to a 64-bit version and to use Package Manager to update the NetWorker software.

This section contains the following chapters:

Chapter 7, "Updating from a Different Bit Version of NetWorker"

Chapter 8, "Updating NetWorker Clients by using the Package Manager Feature"
Updating Methods
CHAPTER 7

Updating from a Different Bit Version of NetWorker

This chapter includes the following topic:

- Updating from 32-bit to 64-bit version of NetWorker........................................122
Updating from 32-bit to 64-bit version of NetWorker

Follow these instructions to update a 32-bit installation of the NetWorker software to a 64-bit version of the NetWorker software.

64-bit NetWorker storage node or client host

When a 64-bit NetWorker storage node or client host has the 32-bit version of NetWorker installed, you can update to NetWorker software to the 64-bit version.

Use the operating system sections of this guide to remove the 32-bit version of the NetWorker software and install the 64-bit version of the NetWorker software. The EMC NetWorker Online Software Compatibility Matrix provides more information about the operating systems on which NetWorker supports the storage node software.

64-bit NetWorker server on Windows

When a 64-bit NetWorker server on Windows has the 32-bit version of NetWorker installed, you can update the NetWorker software to the 64-bit version.

Use the operating system sections of this guide to remove the 32-bit version of the NetWorker software and install the 64-bit version of the NetWorker software.

64-bit NetWorker server on Linux

When 64-bit NetWorker server on Linux has the 32-bit version of the NetWorker software installed, you cannot update to the 64-bit version of the NetWorker software.

Contact EMC Professional Services or a certified EMC partner for more information about performing this update.
CHAPTER 8

Updating NetWorker Clients by using the Package Manager Feature

This chapter includes the following topics:

- Introduction...................................................................................................... 124
- Package Manager requirements....................................................................... 125
- Updating NetWorker by using Package Manager..............................................126
- Troubleshooting Package Manager...................................................................135
Introduction

Package Manager is a feature that provides you with ability to centrally manage software updates of the NetWorker software, including the NetWorker Module for Microsoft (NMM), NetWorker Module for SAP (NMSAP), and NetWorker Module for Database Applications (NMDA) software. In previous versions of the NetWorker software, this feature was also known as Client Push.

There are four main components of the Package Manager feature:

- **Media Kit Location**—A NetWorker DVD or a directory on a host that contains the source NetWorker software packages.
- **Software repository**—A local directory on the NetWorker server that contains a copy of the NetWorker software packages from the Media Kit Location.
- **Target hosts**—NetWorker hosts in the datazone that has a NetWorker software or module software version that supports a Package Manager update.

**Note**

You cannot use the `nsrpush` command to perform updates of the NetWorker NMM software.

- **Proxy host**—A NetWorker host in the datazone with a media kit location that stores NetWorker software packages that differ from the OS of the NetWorker server. For example, if the NetWorker server is a Linux server, the Proxy host is a Windows host, on which you copy NetWorker packages software for Windows.

The following image provides a high level overview of how to use the Package Manager feature to update the NetWorker software on hosts in a datazone:

**Figure 2 Package Manager overview**

In this image, the following steps are performed:

1. Add the software to the Software Repository from the Media Kit Location.
2. Perform an inventory operation of the NetWorker hosts in the datazone, to gather information about the installed NetWorker software and NMDA software.
3. Push software updates to eligible target hosts.
Package Manager requirements

Before you use Package Manager, ensure that the datazone satisfies the Package Manager requirements.

**Note**

You cannot use Package Manager to update a clustered host, a NetWorker server, an EMC License Manager server, an NMC server, a PowerSnap client, or an OS-X client.

This table summarizes the Package Manager datazone requirements.

**Table 22 Package Manager requirements**

<table>
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<tr>
<th>NetWorker server and target host environment</th>
<th>Package Manager requirements</th>
</tr>
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<tbody>
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<td>NetWorker server and target host configuration</td>
<td>• The nsrexecd process must run on the target host.</td>
</tr>
<tr>
<td></td>
<td>• At least one client instance exists on the NetWorker server.</td>
</tr>
<tr>
<td>Supported NetWorker products on the target host</td>
<td>• 9.0.x and 8.1 and later client</td>
</tr>
<tr>
<td></td>
<td>• 9.0.x and 8.1 and later storage node</td>
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</tr>
<tr>
<td></td>
<td>• NMM 9.0.x and 3.0.x in a non-clustered environment.</td>
</tr>
</tbody>
</table>

**Note**

Package manager does not support the installation of the GLR package for NMM. The *EMC NetWorker Module for Microsoft Installation Guide* provides more information about how to install the GLR package.

| NetWorker server on Windows Server 2008 | The Administrator and SYSTEM users require write access to the temp folders defined by the TEMP and TMP environment variables. Software updates, additions to the repository, and inventory operations require write access, |
Updating NetWorker by using Package Manager

Use the software distribution feature, Package Manager, to update the NetWorker, NMM, NMSAP, and NMDA module software on NetWorker hosts in the datazone from the NetWorker server.

When you use this feature, you are not required to log in to each host manually to uninstall the old NetWorker software version, and then install the new NetWorker software version.

Preparing the Media Kit Location

During a Package Manager operation, the NetWorker server obtains the source NetWorker software packages from the software repository, which is located on the NetWorker server, and then the process pushes the software to the target host.

The Media Kit Location contains the source NetWorker software packages that are used to update the NetWorker target hosts. You can specify a Media Kit Location that is a NetWorker software DVD or a directory that contains the extracted software packages. Ensure that the path to the Media Kit Location does not contain spaces or the following special characters: \( \) ( ')

If you place multiple versions of the NetWorker software in the Media Kit Location, create separate subdirectories for each version to avoid overwriting files and directories. The directory structure and file names are identical for each NetWorker version.

There are two different scenarios to consider when preparing the software repository to update the NetWorker software by using Package Manager:

- **The NetWorker server is the same operating system as the target hosts**

- **The NetWorker server and target host operating systems differ**

The NetWorker server is the same operating system as the target hosts

When the target hosts are the same operating system as the server, extract each software package to the Media Kit Location. The Media Kit Location must reside on a file system that is local to the NetWorker server.

The NetWorker server and target host operating systems differ

When the operating system of the target hosts differ from the NetWorker server, for example, when a Windows NetWorker server updates a UNIX client, configure a proxy to store the cross platform packages. The Proxy is a NetWorker host in the datazone that is the same platform as the cross platform packages.

In this configuration, you configure two media kit locations:

- **NetWorker Server Media Kit Location**—A directory on the NetWorker server that contains an extracted copy of all the NetWorker software packages.

- **Proxy Media Kit Location**—A directory on the Proxy host that contains an extracted copy of each cross platform NetWorker software package.

When the operating system of a target host differs from the operating system of the NetWorker server, configure a proxy host to store a copy of the cross platform packages. A Proxy host is a NetWorker host in the datazone that contains a Proxy Media Kit Location. The Proxy Media Kit Location is a local directory, which contains all the cross platform NetWorker packages. The Media Kit Location on the NetWorker
server contains all the NetWorker packages that are required to update all the NetWorker hosts in the datazone.

Follow these guidelines when you configure a Proxy host and the media kit locations:

- Select a Proxy host that is the same platform as the cross platform packages. For example, if the NetWorker server is a Linux host, use a Windows proxy host to store the Windows x86, Windows x64, and Windows ia64 software client packages.
- Install the NetWorker 8.2.x or NetWorker 9.0.x client software on the Proxy host.
- Create a client instance for the Proxy host on the NetWorker server.
- Create a directory on the NetWorker server for the Media Kit Location, which resides on a local file system and does not contain spaces. Extract in this directory the NetWorker software packages for each NetWorker host platform that you want to upgrade. For example, if the NetWorker server is a Linux host and the datazone contains Windows and Linux hosts, extract the Linux and Windows NetWorker software packages in the Media Kit Location.
- Create a directory on the Proxy host for the Proxy Media Kit Location, which resides on a local file system and does not contain spaces. Extract into this directory the cross platform NetWorker software packages.
- Ensure that the cross platform software packages and software versions in the Proxy Media Kit Location are identical to the contents of the Media Kit Location on the NetWorker server.

Note
When the packages differ, the update process indicates that Package Manager updates the cross platform clients to the NetWorker version that is in the NetWorker server Media Kit Location. However, Package Manager updates the client to the NetWorker version in the Proxy Media Kit Location.

Preparing the Proxy Media Location
Use this procedure to prepare the Proxy Media Location.

Procedure
1. On the NetWorker server, extract each compressed software package into the Media Kit Location.
2. On the proxy host:
   a. Create a directory for the Proxy Media Kit Location.
   b. Extract a copy of the cross platform software packages to the Proxy Media Kit Location.
      For example, when a Linux NetWorker server updates Windows x86 and Windows x64 NetWorker clients, extract the Windows x86 and Windows x64 packages to the Proxy Media Kit location.
Preparing the software repository

Before you can use Package Manager to update the NetWorker software, add the information about the NetWorker packages from the Media Kit Location into the Package Manager software repository database.

Use the Hosts Task window in NetWorker Administration or the nsrpush program to prepare the software repository database.

Adding software to the repository by using the Hosts Task window

Use the Hosts Task window in NMC to add software to the Package Manager software repository.

Before you begin

By default, NetWorker creates a directory in the default NetWorker installation location on the NetWorker server for the repository location. To use another location, create the directory before you perform the following steps.

Procedure

1. Login to the NMC server with a user that is both an NMC administrator and a member of the Application administrators user group on the NetWorker server.
2. Use NMC to connect to the NetWorker server.
3. On the EMC NetWorker Administration window, click Hosts.
   The Hosts Task window appears with the Known Hosts button selected. The Known Hosts view provides a list of NetWorker hosts configured on the NetWorker server.
4. Click Software Repository.
   The Repository window pane appears.
5. Right-click an empty area of the Repository window pane and select Add to repository.
   The Create Repository Location window appears.
6. If this is the first time you are creating the repository, perform one of the following actions:
   • Use the default location and click Next.
     The default location differs on Windows and UNIX:
     - Windows: NetWorker_install_dir\repository
     - UNIX: /nsr/repository
   • Specify an alternate location. Click the folder icon and browse to the path.
     Click OK. On the Message window, click OK.
7. On the Add packages from the media kit location to the repository window, select one of the following options:
   • Add Windows/UNIX packages to the repository—Select this option to add software from a media kit location that is local to the NetWorker server.
   • Add Cross Platform UNIX/Windows packages to the repository using a Proxy host—Select this option when you want to add packages to the repository for operating systems that differ from the NetWorker server.
In the **Host** field, specify the name of the Proxy host.

In the **Proxy Media Kit Location** field, specify the path to the media kit location on the proxy host that contains the extracted NetWorker software packages.

8. In the **Media Kit Location** field, specify the path to the media kit location, and then click **Open Media Kit**.

   The **Software Available** window pane contains a list of the detected software packages in the media kit location.

9. On the **Software Available** window pane, select the products to add to the repository, then click **Add**. Use the Control or Shift key to select multiple software packages.

   When the repository add operation completes, a message pop-up appears. Click **OK**.

   **NOTICE**

   Troubleshooting Package Manager on page 135 provides more information if you do not see all the products in the Media Kit Location or you see duplicate packages.

10. Click **Cancel** to return to the **Software Repository** window.

    **NOTICE**

    If an **usam** error appears, then review the **nsrcpd.raw** on the NetWorker server for error messages.

11. Confirm that the wizard added the software to the repository location.

**Adding software to the repository by using the nsrpush program**

Log in to the NetWorker server with the root user on UNIX or the administrator user on Windows, and use the **nsrpush** program to add software to the software repository database.

**Note**

You cannot use the **nsrpush** command to add the NMM software to the repository, use Package Manager only.

**Procedure**

1. Review the list of extracted products in the media kit location. The command to view the Windows and UNIX products differ:
   - For UNIX software products, type:

     ```
     nsrpush -L -U -m media_kit_location
     ```
   - For Windows software products, type:

     ```
     nsrpush -L -W -m media_kit_location
     ```

2. Use the **nsrpush** command to add packages, one at a time, to the repository:

   ```
   nsrpush -a -p Product_Name -v version -P platform -R repo_location -U|-W -m media_kit_location -c cross-platform_client -C cross_platform_media_kit_location
   ```
where:

- **Product_Name** is the name of the product:
  - NetWorker
  - NetWorker Module for SAP
  - NetWorker Module for Databases and Applications

**Note**

Product names are case sensitive and ensure that you enclose the module product names in quotation marks (" ").

- **version** is the version of the software product, for example, 9.1.
- **platform** is the operating system platform of the package, for example: `win_x64` or `win_x86`.
- **-R repo_location** specifies the path to the repository. Specify this option when you add software to the repository for the first time. The default location differs on Linux, UNIX, and Windows:
  - On Linux and UNIX: `/nsr/repository`
  - On Windows: `NetWorker_install_dir\repository`
- **-U** specifies a UNIX media kit and **-W** specifies a Windows media kit. Use the appropriate option for the package that you want to add to the repository.
- **-m media_kit_location** is the path to the media kit.
- **-c cross_platform_client** specifies the hostname of the proxy host. Use this option only when you add cross platform packages.
- **-C cross_platform_media_kit_location** specifies the location of the proxy media kit location. Use this option only when you add cross platform packages.

**Note**

Once started, you cannot cancel the add software to the repository operation.

---

**Adding a 64-bit Solaris package to the repository on Windows**

Use this procedure to add the 64-bit Solaris package to a repository on a Windows NetWorker server host.

Add the 64-bit Solaris package to a repository on a Windows NetWorker server host, under the following scenario:

- The Media Kit Location is: `D:\temp\downloads`
- The Proxy Media Kit Location on the cross-platform host `solaris_host` is: `/tmp/prod`

Type the following command:

```
nsrpush -a -p NetWorker -v 8.1 -P solaris_64 -U -m "D:\temp\downloads" -c "solaris_host" -C /tmp/prod
```
Adding a 64-bit Windows package to the repository on UNIX

Use this procedure to add the 64-bit Windows package to the repository to a NetWorker server on UNIX.

Add the 64-bit Windows package to the repository to a NetWorker server on UNIX under the following scenario.

- The media kit location is: /tmp/prod
- The Proxy Media Kit Location on the cross-platform host windows_host is: D: \temp\downloads

Type the following command:

```bash
nsrpush -a -p NetWorker -v 8.1 -P win_x64 -W -m /tmp/prod -c "windows_host" -C "D:\temp\downloads"
```

Inventorizing the target hosts for installed products

Before you can update the NetWorker software on a host, you must inventory the host to determine the installed versions of NetWorker software.

Use the Hosts Task window in NMC or the nsrpush program to inventory the target hosts.

Inventorizing installed products by using NMC

Use Software Inventory in Hosts Task window to generate an inventory of the NetWorker software that is installed on the target hosts.

Procedure

1. On the NetWorker Administration window, click Hosts.
2. Select the hosts to inventory. Use the Control or Shift key to select multiple hosts. Right-click and select Perform Inventory.

   The Software Operations window pane provides the status of the inventory job. When you inventory job many clients, the operation might take awhile to complete.

   If the inventory operation fails, perform one of the following:

   - Review the nsr cpd.raw file, located in the NetWorker_installation_dir/logs directory on the NetWorker server.
   - Right-click the failed operation and select Restart to re-attempt the inventory.

3. Click Software Inventory.

   The Software window pane displays information about the NetWorker software that is installed on known hosts in the datazone. Provide a summary of NetWorker, NMDA, and NMM software that is installed on the inventoried hosts.
Inventoring installed products by using nsrpush

Use the `nsrpush` command to generate an inventory of the NetWorker, NMDA, and NMSAP software that is installed on the target hosts.

**NOTICE**

Add at least one package to the software repository before you run an inventory operation.

To inventory hosts configured on the NetWorker server, type the following command one of the following commands:

```
nsrpush -i -all
nsrpush -i hostname...hostname
```

where:

- `-all` queries and inventories every NetWorker client in the datazone.
- `hostname...hostname` is a space-separated list of hostnames to inventory in the datazone.

Updating all hosts on the NetWorker server

Once a NetWorker host is in the Package Manager inventory, use NMC to update the host with software that resides in the software repository database.

For Windows hosts that support BBB, Package Manager installs the BBB drivers. The *EMC NetWorker Administration Guide* describes how to enable and configure BBB backups.

You can use the **Hosts Task** window or the `nsrpush` program to update NetWorker products on target hosts that are based on the following scenarios:

- Updating NetWorker products on a user specified host by using the NMC
- Updating NetWorker products on a user specified host by using the `nsrpush` command

Updating NetWorker products on a user-specified host by using the NMC

You can use the Package Manager to update the NetWorker software on certain hosts in a datazone.

**Before you begin**

Perform a client inventory operation before you upgrade the software on the client to ensure that NetWorker has an accurate inventory of the software that is installed on a host. Package Manager does not support updating the Extended Client package on Linux and UNIX client and storage node hosts. Before you use Package Manager to update a Linux or UNIX client or storage node, remove the Extended Client package.
Procedure

1. On the **Software Inventory** view, select each host that you want to update. Use the **Ctrl** or **Shift** key to select multiple hosts.

2. Right-click and select **Upgrade software**.

3. In the pop-up window, click **Yes, Continue** to perform the software upgrade.

4. On the **Upgrade Software** window, a list of hosts and the installed products that are eligible for update appear. Select the hosts and products, and then click **Upgrade**.

   When you update an NMDA or NMM client, you must update module and NetWorker products simultaneously. To select multiple products, hold the **Ctrl** key while you select a product.

   **NOTICE**

   If the wizard displays multiple versions of the same product, then select only one of the listed versions. When you select multiple versions of the same product for the same client, the wizard only updates the client to the last version that you selected.

   The following figure provides an example of the product selection screen for an NMM client.

   **Figure 4** Product selection for an NMM client

   ![Product selection for an NMM client](image)

5. On **Monitor Activity** window review the status of selected update job in the upper table and the status of each client update operation in the lower pane. When the update job contains many clients, the job might take awhile to complete.

   **NOTICE**

   Do not use the **Back** button until the upgrade job completes.

   If the update operation fails, review the NetWorker_Installation_dir/nsrcpd.raw file on the NetWorker server for error messages. To try the update again, select the failed operation, and then click **Retry client job**.

6. Click **Finish**.

**After you finish**

On Linux and UNIX client and storage node hosts, install the Extended Client package.
Updating NetWorker products on a user specified host by using the nsrpush command

Log in to the NetWorker server with the root user on UNIX or the administrator user on Windows and use the `nsrpush` command to update all inventoried hosts or selected hosts of the NetWorker server.

**Before you begin**

Package Manager does not support updating the Extended Client package on Linux and UNIX client and storage node hosts. Before you use Package Manager to update a Linux or UNIX client or storage node, remove the Extended Client package.

**Procedure**

- To query a host for a list of installed NetWorker products, type:

  ```
  nsrpush -s -all
  nsrpush -s hostname...hostname...
  ```

  Where:
  - `-all` queries each inventoried client.
  - `hostname.....hostname` is a space-separated list of hostnames to query.

- To update all hosts in a datazone with the exception of certain hosts, add the clients to the exclude list. Separate multiple hostnames with spaces. For example, type:

  ```
  nsrpush -e hostname...
  ```

  Where `hostname` is the name of the host to exclude from the update process.

  **Note**

  To remove clients from the exclude list, type `nsrpush -x hostname...`

- To update the NetWorker software, type:

  ```
  nsrpush -u -p product -v version -Tp directory -T timeout -all|hostname...hostname
  ```

  where:
  - `product` is the name of the product to update:
    - NetWorker
    - NetWorker Module for Databases and Applications

  **Note**

  Product names are case sensitive

  - `version` is the version of the product in the repository.
  - `-Tp path` is optional and allows you to specify an alternate existing location with sufficient disk space, to store temporary installation files on the target host. When you specify multiple clients, you must specify the path in the same order. The default location is `C:\windows\temp` on Windows and `/tmp` on Linux and UNIX.
Note

When the path does not exist on the target host NetWorker copies the temporary files to C:\ on a Windows host and / on a Linux and UNIX host.

- To timeout is optional and allows you to define how long, in minutes that nsrpush attempts the update operation on a client before cancelling the operation. When you specify multiple clients, you must specify the timeout values in the same order. The default timeout value is 10 mins.
- -all updates all inventoried clients that are not in the exclude list.
- hostname.....hostname is a space-separated list of hostnames to query.

Example 1 Updating Two Clients

To update two client hosts, client1.emc.com and client2.emc.com to the latest version of NetWorker, type the following command:

nsrpush -u -p NetWorker -v 8.1 client1.emc.com client2.emc.com

If the update operation fails, review one of the following files for error messages:

- nsrpd.raw file on the NetWorker server
- nw_install.server_name.log file in the tmp directory on the target host

After you finish

On Linux and UNIX client and storage node hosts, install the Extended Client package.

Troubleshooting Package Manager

This section provides resolutions to common Package Manager issues.

No available products were found for the selected clients in the software repository

This error message appears during an update operation in the following scenarios.

- When the software repository does not contain any software packages.
- When the required software is not in the software repository.
- When the version in selected client is more recent than the product version in the repository.

To resolve this issue, add software packages to the repository and ensure version compatibility.

Client hostname is in the excluded clients list

This message appears during an inventory or update operation when you specify the -all option or a hostname for a client that is in the Client Push exclude list.

To resolve this issue:

1. Determine which clients are in the exclude list:
nsrpush -d

2. Remove clients from the exclude list:

    nsrpush -x hostname...

Remote error running the tmp space check command on client

This message appears when you specify the -Tp option to update the software, but nsrpush has encountered an error accessing the specified path.

To resolve this issue, ensure that the:

- Path exists on the target host.

**NOTICE**

When the path does not exist, nsrpush copies the temporary files to C:\ on Windows and in the root NetWorker installation directory on UNIX. For example, / UNIX and /root on Linux.

- File system that contains the path has sufficient disk space to store the temporary installation files.

Selected Products window does not contain all products

When adding software to the repository using the Software Configuration wizard, if the Selected Products window does not contain all products in the Media Kit Location, then review the Client Push log file, nsrcpd.raw on the NetWorker server for error messages.

- On Linux, the /nsr/logs directory contains the nsrcpd.raw file.
- On Windows, the C:\Program Files\EMC NetWorker\nsr\logs directory contains the nsrcpd.raw file.

Select Products window contains duplicate packages

When adding software to the repository, if you specify a Media Kit Location that contains multiple copies of the same NetWorker package, then the package appears twice in the Select Products window.

To avoid this issue, ensure that the Media Kit Location contains only one copy of a NetWorker package.

**NOTICE**

When you select both copies, only one copy is added to the repository.

Waiting for daemon

This error message appears when you attempt to use Package Manager or the nsrpush command to update a Linux or UNIX host, on which the Extended Client package is installed.

To resolve this issue, remove the Extended Client package and try the update again.
Refer to the following chapters for post update configuration information, how to connect to the NMC GUI and NetWorker server, how to review the migration results, and troubleshooting NMC GUI and NetWorker server connectivity issues.

This section has the following chapters:

Chapter 9, "Post Update Tasks"

Chapter 10, "Troubleshooting NMC GUI and NetWorker Server Connection Issues"
Post Update Configurations and Reviewing the Migration Results
CHAPTER 9

Post Update Tasks

After you update the NetWorker and NMC servers, review this chapter to ensure that you can connect to the NMC server. If you updated the Networker software from 8.1.x or 8.2.x, this section provides detailed information about changes that occur in the NetWorker software.

This chapter contains the following topics:

- Preparing to connect to the NMC server .......................................................... 140
- After upgrading from 8.1.x and 8.2.x................................................................. 142
Preparing to connect to the NMC server

You cannot connect to the NMC GUI with any of the following, previously supported, operating systems:

- AIX
- HP-UX
- Solaris

Before you try to connect to the NMC server from a supported host, ensure that JRE is correctly configured.

Clearing the Java cache

Before you update the NMC server, review this section for information about NMC clients and how to clear the java cache.

The NMC server update process replaces the gconsole.jnlp file in the Java web Start cache on the NMC server. As a result, after an NMC server update, the NMC client fails to start the NMC GUI with an error message similar to the following:

Unable to launch NetWorker Management Console

To prevent this issue, on each host that you use as an NMC client, clear the local java cache. This workaround enables the NMC client to download the new gconsole.jnlp file from the NMC server.

The procedure is different for UNIX and Windows.

UNIX Console client

Use the following procedure to clear the java cache on a UNIX Console client.

Procedure

1. Run the Java Web Start program.
2. Move or delete the $HOME/.java directory:
   ```
   cd $HOME
   mv .java .java_orig
   ```
3. Run the javaws -viewer command to create a $HOME/.java directory.
4. Start the Java Cache Viewer.
5. Reconfigure Java web Start preferences if required and exit the Java Cache Viewer.

Windows Console client

Use the following procedure to clear the java cache on a Windows Console client.

Procedure

1. Open the Java Control Panel application.
2. On the General tab, in the Temporary Internet Files section, select Settings.
3. Select Delete files....
4. Select Trace and Log files, Cached Applications and Applets, and Installed Applications and Applets, and then click OK.
5. Close the Java Cache Viewer window.
6. Close the Java Control Panel application.

**Enabling temporary internet file caching**

Enable the Temporary internet file caching attribute in the Java Control Panel of the NMC client. When you do not enable this option in JRE, Java WebStart fails to start.

For Windows NMC clients:
1. Browse to Control Panel > Java > General > Temporary Internet Files > Settings.
2. Ensure that the option Keep temporary files on my computer is selected.

For UNIX NMC clients:
1. Start the Java W Start Application Manager, `javaws`.
2. Select Enable temporary internet file caching.

**Adding the NMC server to Exception Site list**

Java security settings block the NMC server application. Therefore, you must add the NMC server address to the JRE Exception site list.

**Procedure**

1. Open the Java Control Panel.
2. On the Security tab, select Edit Site list.
3. Click Add.
4. In the Location field, specify the URL to the NMC server in the format `http://server_name:9000` where `server_name` is the hostname of the NMC server.

**Note**

If you connect to the NMC server by using the IP address of the NMC server, add an entry for the IP address in the following format:

`http://ip_address:9000`

5. Click OK.
6. In the Security Warning window, click Continue.
7. Click OK.
After upgrading from 8.1.x and 8.2.x

Review this section after upgrading the NetWorker software from 8.1.x and 8.2.x for information about resource migration, changes to the NetWorker software, clean up of migration files, LDAP considerations, and how to log in to the NMC server.

NMC server only, removing the conversion database files

After you successfully migrate the NMC 8.1.x and 8.2.x server database, you can remove the pre-conversion and conversion database directories.

Procedure

1. Remove the pre-9.1 NMC database directory.
   By default, the database directory appears in the following location:
   - AIX, HP-UX, and Linux: /opt/lgtonmc/lgto_gstdb
   - Solaris: /opt/LGTONMC/lgto_gstdb
   - Windows: C:\Program Files\EMC NetWorker\Management\lgto_gstdb

2. Remove the conversion directory that contains the converted database files that are created by the gstdbunload command.

Note

If you converted an NMC database on a pre-9.1 NMC server on AIX, HP-UX, or Solaris, remove the conversion directory on the source NMC server and the NMC 9.1 server.

Configuring the NMC server to manage additional NetWorker servers

The NMC server can use only one NetWorker Authentication Service to provide authentication services. When the NMC server manages more than one NetWorker server, configure a trust between each NetWorker server that the NMC server will manage and NetWorker server that will provide authentications services to the NMC server. After you establish each trust, update the user groups on each NetWorker server to include the users and groups that require access to the NetWorker server.

Procedure

1. To establish the trust, type the following command on each NetWorker server that is not local to the NetWorker Authentication Service that NMC uses for authentication:

   nsrauthtrust -H Authentication_service_host -P Authentication_service_port_number

   where:
   - The location of the nsrauthtrust command differs on Linux and Windows:
     - Linux—/usr/sbin
     - Windows—C:\Program Files\EMC NetWorker\nsr\bin
• Authentication_service_host is the hostname of the NetWorker server that authenticates the NMC server host.

• Authentication_service_port_number is the port number used by the NetWorker Authentication Service. The default port number is 9090.

For example:
nsrauthtrust -H nwserver.emc.com -P 9090

2. Grant the NetWorker Authentication Service user groups access to the NetWorker server, by typing the nsraddadmin command.

nsraddadmin -H Authentication_service_host -P Authentication_service_port_number

For example:
nsraddadmin -H nwserver.emc.com -P 9090

The nsraddadmin command updates the following user groups:
• Application Administrator—Adds the distinguished name (DN) of the NetWorker Authentication Service Administrators group.
• Security Administrator—Adds the DN of the NetWorker Authentication Service Administrators group.
• Users—Adds the DN of the NetWorker Authentication Service Users group.

3. (Optional) To add other users or groups from the NetWorker Authentication Service to the Application Administrator and Security Administrator user groups on the NetWorker server, you must determine the DN for the user or group, and then use the nsraddadmin command with the -e option to add the user or group.

For example, to add a user to the Application Administrator and Security Administrator user groups on the NetWorker server, perform the following steps:

a. Use the authc_mgmt command with the -e find-all-users option to display a list of users and the associated user ID in the local user database:

authc_mgmt -u administrator -p password -e find-all-users
The query returns 2 records.

User Id User Name
1000 administrator
1001 Patd

Note
The location of the authc_mgmt command differs on Linux and Windows:
• Linux—/opt/emc/authc/bin
• Windows—C:\Program Files\EMC\Authc\bin

b. Use the authc_mgmt command with the -e find-user option to display user details for the administrator account, including the user DN:

authc_mgmt -u administrator -p password -e find-user -D user-id=user_id

Configuring the NMC server to manage additional NetWorker servers
where \textit{user\_id} is the user ID value for the Patd account.

For example:

\texttt{authc\_mgmt -u administrator -p 1.Password -e find-user -D user\_id=1001}

User Id : 1001
User Name : Patd
User Domain :
User First Name: Patrick
User Last Name : Dunn
User Email : Patd@local
User Details :
User DN : \texttt{cn=Patd,cn=Users,dc=bu-iddnwserver2,dc=IddLab,dc=local}
User Enabled : true
User Groups : [100, 101]

c. Use \texttt{nsraddadmin} command to add the user DN of the administrator account to the Application Administrators and Security Administrators user group on each remote NetWorker server, that the NMC server manages:

\texttt{nsraddadmin -e user\_dn}

For example:

\texttt{nsraddadmin -e "cn=Patd,cn=Users,dc=bu-iddnwserver2,dc=IddLab,dc=local"}

Added role \texttt{"cn=Patd,cn=Users,dc=bu-iddnwserver2,dc=IddLab,dc=local"} to the 'Application Administrators' user group.
Added role \texttt{"cn=Patd,cn=Users,dc=bu-iddnwserver2,dc=IddLab,dc=local"} to the 'Security Administrators' user group.

The \textit{EMC NetWorker Security Configuration Guide} provides detailed information about how to add additional local database users, LDAP and AD users to the User Group resources on the NetWorker server.

After you finish

The \textit{EMC NetWorker Security Configuration Guide} provides detailed information about how to add additional local database users, LDAP and AD users to the User Group resources on the NetWorker server.

**Connecting to the NMC server GUI**

Complete the following procedure to connect to the NMC Server GUI from an NMC client. By default, the NetWorker Authentication Service uses the local user database for user authentication. Specify the NetWorker Authentication Service administrator account to log in to the NMC Server. The \textit{EMC NetWorker Security Configuration Guide} describes how to configure the NetWorker Authentication Service to use LDAP or AD for user authentication.

The Troubleshooting NMC GUI Connection Issues chapter provides information about how to troubleshoot issues when you cannot connect to the NMC GUI.
Procedure

1. From a supported web browser session, type the URL of the NMC Server:

   \[ \text{http://server\_name:port} \]

   where:

   - \text{server\_name} is the name of the NMC Server.
   - \text{port} is the port for the embedded HTTP server. The default HTTP port is 9000.

   For example: \text{http://houston:9000}

   The \text{gconsole.jnlp} file downloads to the host. When the download completes, open the file.

2. On the Login window, specify the NetWorker Authentication Service administrator username and password, and then click \text{OK}.

   \text{Note}

   After you update the NMC server, the administrator account that you used to connect to the NMC server on 8.1.x and 8.2.x does not exist and is replaced by the NetWorker Authentication Service administrator account.

3. If you did not install a supported version of JRE on the host, then a prompt to install JRE appears. Cancel the installation, install JRE, and then re-run the installation.

4. In the Welcome to the NMC Server Configuration Wizard page, click \text{Next}.

5. In the Define Database Backup Server page, specify the name of the NetWorker server that will back up the NMC server database, and then click \text{Next}.

6. In the Specify a list of managed NetWorker Servers page:

   a. Specify the names of the NetWorker Servers that the NMC Server will manage, one name per line.

   \text{Note}

   If the NMC Server is also the NetWorker Server, specify the name of the NetWorker Server.

   b. Leave the default options \text{Capture Events} and \text{Gather Reporting Data} enabled.

   Consider the following option:

   - To allow the NMC Server to monitor and record alerts for events that occur on the NetWorker Server, enable the \text{Capture Events} option.
   - To allow the NMC Server to collect data about the NetWorker Server and generate reports, enable the \text{Gather Reporting Data} option.

7. If you created NMC users on an NMC 8.1.x and 8.2.x server, a pop-up window appears asking you if you want to migrate the NMC users to the NetWorker Authentication Service local database. Click \text{Yes} to start the user migration wizard.
8. In the **Migrate Users** page, select the users that you want to migrate.

**Note**

By default all users are selected for migration. The migration deletes unselected user accounts.

9. For each user, perform the following steps:
   a. In the **Password** field, specify an initial password.
      
      Ensure the password complies with the following minimum requirements:
      
      - Nine characters long
      - One uppercase letter
      - One lowercase letter
      - One special character
      - One numeric character
   
   b. Leave the default selection for **Password Change Required**, which ensures that when the user connects to the NMC Server for the first time, that the log in process prompts the user to change their password.
   
   c. In the **Groups** field, if the user will manage user accounts, select the Administrators group.

**Results**

The log in process migrates the selected NMC users into the NetWorker Authentication Service local database, and the NMC GUI appears. The following sections describe how to connect to a NetWorker server and configure User Group membership for the migrated NMC users.

**Connecting to the NetWorker server after an update and reviewing the migration results**

When you connect to the NetWorker server for the first time after an update, you can review the results of the NetWorker server resource migration.

**Procedure**

1. In the **Enterprise** window, select the NetWorker server, and then select **Launch Application**
   
   The **NetWorker Migration Succeeded** window appears.

2. Click **Open Migration Log File** to review migration log file and the status of the server resource migrations.
   
   The following figure provides an example of the **Migration Log File** window.
Updating the NetWorker User Group resources for migrated NMC users

The NetWorker server uses the membership in the External Roles field of the user group resources to determine the privileges that are assigned to the NetWorker Authentication Service local database users. After the log in process migrates NMC users into the NetWorker Authentication Service local database, update the User Group resources on each managed NetWorker server, to provide the migrated NMC users with the privileges to each NetWorker server.

Perform the following steps while logged in to the NMC server with the Administrator account.

Procedure

1. In the NMC GUI, create an NMC group that contains the local database users. This group allows you to quickly add multiple users that require the same privileges to one or more user groups:
   a. On the NMC GUI, click Setup.
   b. On the User and Roles navigation pane, right-click Groups and select New.
   c. In the Name field, specify a unique name for the group.
      In the Local Users section, select all the user accounts to add to this group, and then click OK.

2. In the Administration window, perform the following steps:
   a. On the toolbar, select Server.
   b. On the left navigation pane, expand User Groups.
   c. Right-click the user group to which the NMC users require membership, and select Properties.
   d. In the Configuration section, click the Add (+) button beside the External Roles attribute.
e. Select each local database user or group that requires the privileges that are assigned to the user group, and then click OK.

To select multiple successive users or groups, hold the Ctrl key while you select the first and last user or group. To select multiple individual users or groups in any order, hold the Shift key while you select each user or group.

Results
The distinguished name (dn) for each selected user and group appears in the External Roles field.

Configuring Force Backup Level

NetWorker 8.1.x and 8.2.x provided the Force incremental option in the Group resource. The option provided you with the ability to schedule multiple backups for clients in a 24 hours period, but limit the number of full backups to the first scheduled backup. Each subsequent backup in the 24 hour period is an incremental backup. NetWorker 9.1.x provides you with the ability to define a backup level for a backup action that differs from the scheduled level. NetWorker 9.1.x does not migrate the value in the Force incremental option to the action resource.

For workflows that have more than one scheduled backup within a 24-hour period, use the Force Backup Level attribute to allow more than one backup to occur at two different backup levels in a 24-hour period. When you select a backup level in the Force Backup Level attribute, the first backup is performed at the scheduled backup level. Each subsequent occurrence of the backup action in the next 24 hours occurs at the level defined in the Force Backup Level attribute. For example, if the level defined by the schedule is Full and the Force Backup Level attribute is set to Incr, the first backup started by the action occurs at a level full and subsequent backups, within 24 hours of the start of the full backup are incremental. By default this option is cleared, which means that if the action runs multiple backup operations in a 24 period, all the backups occur at the scheduled backup level.

To define a level for multiple backups that occur in a 24 hour period, perform the following steps:

Procedure

1. In the Administration window, click Protection.
2. In left pane, expand Policies.
3. Expand the policy and then select the workflow.
4. In the Actions pane, right click the action that is schedule to run multiple times in a 24 hour period, and then select Properties.
   The Specify the Action Information window in the Policy Actions wizard appears.
5. From the Force Backup Level list select a backup level.
6. Click Next on each subsequent window, and then click Configure.

Results
The level that you chose appears in the Force Backup Level column for the action, in the Action pane. The following figure provides an example of the Action pane, where the Force Backup Level attribute is set to Incr for the backup action.
Reconfiguring LDAP or AD authentication

In a NetWorker 8.1.x and 8.2.x datazone, the NMC server maintained the LDAP and AD configuration information and managed authentication. In a NetWorker 9.0.x datazone, the NetWorker Authentication Service performs these tasks. After you update the NMC server, use the details in the config.xml file to reconfigure LDAP or AD authentication in the NetWorker Authentication Service database.

Perform the following steps on the NetWorker server host on which you configured the NetWorker Authentication Service that manages the LDAP or AD configuration information.

Procedure

1. Open the config.xml file that you made a copy of before you updated the NMC server.
2. Search for the string `<class-id class="LDAP"/>`.
3. Copy the configuration information that appears after `<class-id class="LDAP"/>`, between the `<properties>` and `</properties>` tag to a text file.

   For example, output similar to the following appears after the `<class-id class="LDAP"/>` tag:

   ```xml
   <properties>
   ;xml version="1.0" encoding="UTF-8" ?
   ;LDAPAuthorityConfig;
   ;bindDn;cn=administrator,cn=users,dc=iddlab,dc=local;/bindDn;
   ;bindPassword;X0YKgAuhHuoDeEEdXNkdg==
   $FPmNwY5DvjqwXR2Bvypw==;/bindPassword;
   ;serverName;idd-ad.iddlab.local;/serverName;
   ;authorityName;;/authorityName;
   ;ldapDebugLevel;0;/ldapDebugLevel;
   ;protocol;ldap;/protocol;
   ;portNumber;389;/portNumber;
   ;ldapTimeout;30000;/ldapTimeout;
   ;certificateFile;;/certificateFile;
   ;userSearchPath;CN=Users,DC=IddLab,DC=local;/userSearchPath;
   ;groupSearchPath;CN=NetWorker,DC=IddLab,DC=local;/groupSearchPath;
   ;userObjectClass;Person;/userObjectClass;
   ;userIdAttribute;cn;/userIdAttribute;
   ;groupMemberAttribute;Member;/groupMemberAttribute;
   ;groupObjectClass;group;/groupObjectClass;
   ;groupNameAttribute;c;/groupNameAttribute;
   ;clientCertificate;;/clientCertificate;
   ;clientKeyFile;;/clientKeyFile;
   ;/LDAPAuthorityConfig</properties>
   ```
You use the information that is contained between the `<properties> </properties>` tag to configure LDAP/AD in the NetWorker Authentication Service database.

4. Use a text editor to modify the LDAP or AD template file.

NetWorker provides a template file that you can modify with the configuration values that are specific to your environment, and then run to configure AD authentication.

The location and name of the file differs on Windows and Linux:

- **LDAP template file:**
  - Windows—`C:\Program Files\EMC NetWorker\nsr\authc-server\scripts\authc-create-ldap-config.bat.template`
  - Linux—`/opt/nsr/authc-server/scripts/authc-create-ldap-config.sh.template`

- **AD template file:**
  - Windows—`C:\Program Files\EMC NetWorker\nsr\authc-server\scripts\authc-create-ad-config.bat.template`
  - Linux—`/opt/nsr/authc-server/scripts/authc-create-ad-config.sh.template`

5. In the template file, replace the variables that are enclosed in `<>` with the values that are specific to the configuration.

The following table provides information about each configuration option.

<table>
<thead>
<tr>
<th>9.1 Option</th>
<th>Equivalent 8.2 and earlier option name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>-D &quot;config-tenant-id=tenant_id&quot;</code></td>
<td>N/A</td>
<td>Required. The ID of the tenant that you created for the LDAP or AD configuration in the local database. By default, NetWorker Authentication Service creates one tenant that is called Default with a tenant ID of 1.</td>
</tr>
<tr>
<td><code>-D &quot;config-active-directory=y/n&quot;</code></td>
<td>N/A</td>
<td>Optional. A yes or no value that specifies if the external authority is AD. When you set this option to y for an AD configuration, NetWorker Authentication Service uses Microsoft specific enhancements for LDAP to perform optimized queries. Default value: NO</td>
</tr>
<tr>
<td><code>-D &quot;config-name=authority_name&quot;</code></td>
<td>N/A</td>
<td>Required. A descriptive name, without spaces for the LDAP or AD configuration.</td>
</tr>
</tbody>
</table>
### Table 23 Configuration options (continued)

<table>
<thead>
<tr>
<th>9.1 Option</th>
<th>Equivalent 8.2 and earlier option name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-D &quot;config-server-address=protocol:// hostname_or_ip_address:port# / base_dn&quot;</td>
<td>protocol serverName portNumber</td>
<td>The maximum number of characters is 256. Specify ASCII characters in the config name only. Required. A string that specifies the protocol, hostname, or IP address of the LDAP or AD server, the LDAP port number, and the base DN. The base DN specifies the base suffix from which all the operations originate. For the protocol, specify LDAP for LDAP or AD authorities and LDAPS for LDAPS.</td>
</tr>
<tr>
<td>-D &quot;config-domain=domain_name&quot;</td>
<td>N/A</td>
<td>Required. A descriptive name, without spaces for the domain attribute in the local database. EMC recommends that you specify the domain name that is used by the LDAP or AD authority. The maximum number of characters is 256. Specify ASCII characters in the domain name only.</td>
</tr>
<tr>
<td>-D &quot;config-user-dn=cn=name,dc=domain_component1,dc=domain_component2...&quot;</td>
<td>bindDn</td>
<td>Required. The full distinguished name (DN) of a user account that has full read access to the LDAP or AD directory.</td>
</tr>
<tr>
<td>-D &quot;config-user-dn-password=password&quot;</td>
<td>bindPassword</td>
<td>Required. The password of the bind account.</td>
</tr>
<tr>
<td>-D &quot;config-user-search-path=user_search_path&quot;</td>
<td>userSearchPath</td>
<td>Required. The DN that specifies the search path that the authentication service should use when searching for users in the LDAP or AD hierarchy. Specify a search path that is relative to the base DN that</td>
</tr>
</tbody>
</table>
### Table 23 Configuration options (continued)

<table>
<thead>
<tr>
<th>9.1 Option</th>
<th>Equivalent 8.2 and earlier option name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-D &quot;config-user-id-attr=user_ID_attribute&quot;</td>
<td>useridAttribute</td>
<td>Required. The user ID that is associated with the user object in the LDAP or AD hierarchy. For LDAP, this attribute is commonly <code>uid</code>. For AD, this attribute is commonly <code>sAMAccountName</code>.</td>
</tr>
<tr>
<td>-D &quot;config-user-object-class=user_object_class&quot;</td>
<td>userObjectClass</td>
<td>Required. The object class that identifies the users in the LDAP or AD hierarchy. For example, <code>inetOrgPerson</code>.</td>
</tr>
<tr>
<td>-D &quot;config-group-search-path=group_search_path&quot;</td>
<td>groupSearchPath</td>
<td>Required. A DN that specifies the search path that the authentication service should use when searching for groups in the LDAP or AD hierarchy. Specify a search path that is relative to the base DN that you specified in the <code>config-server-address</code> option.</td>
</tr>
<tr>
<td>-D &quot;config-group-name-attr=group_name_attribute&quot;</td>
<td>groupNameAttribute</td>
<td>Required. The attribute that identifies the group name. For example, <code>cn</code>.</td>
</tr>
<tr>
<td>-D &quot;config-group-object-class=group_object_class&quot;</td>
<td>groupObjectClass</td>
<td>Required. The object class that identifies groups in the LDAP or AD hierarchy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For LDAP, use <code>groupOfUniqueNames</code> or <code>groupOfNames</code>.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For AD, use <code>group</code>.</td>
</tr>
<tr>
<td>-D &quot;config-group-member-attr=group_member_attribute&quot;</td>
<td>groupMemberAttribute</td>
<td>Required. The group membership of the user within a group.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• For LDAP:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• When the Group Object Class is <code>groupOfNames</code> the attribute is commonly <code>member</code>.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• When the Group Object Class is <code>groupOfUniqueNames</code> the attribute is commonly <code> uniquemember</code>.</td>
</tr>
<tr>
<td>9.1 Option</td>
<td>Equivalent 8.2 and earlier option name</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>-D &quot;config-user-search-filter=user_search_filter_name&quot;</td>
<td>N/A</td>
<td>Optional. The filter that the NetWorker Authentication Service can use to perform user searches in the LDAP or AD hierarchy. RFC 2254 defines the filter format.</td>
</tr>
<tr>
<td>-D &quot;config-group-search-filter=group_search_filter_name&quot;</td>
<td>N/A</td>
<td>Optional. The filter that the NetWorker Authentication Service can use to perform group searches in the LDAP or AD hierarchy. RFC 2254 defines the filter format.</td>
</tr>
<tr>
<td>-D &quot;config-search-subtree=y/n&quot;</td>
<td>N/A</td>
<td>Optional. A yes or no value that specifies if the external authority should perform subtree searches. Default value: No</td>
</tr>
<tr>
<td>-D &quot;config-user-group-attr=user_group_attribute&quot;</td>
<td>N/A</td>
<td>Optional. This option supports configurations that identify the group membership for a user within the properties of the user object. For example, for AD, specify the attribute memberOf.</td>
</tr>
<tr>
<td>-D &quot;config-object-class=object_class&quot;</td>
<td>N/A</td>
<td>Optional. The object class of the external authentication authority. RFC 4512 defines the object class. Default value: objectclass.</td>
</tr>
</tbody>
</table>

The following provides an example of a modified template file:

```bash
authc_config -u administrator -p "1.Password" -e add-config
-D "config-tenant-id=33"
-D "config-name=iddconfig"
-D "config-server-address=ldap://idd-ad.iddlab.local:389/dc=iddlab,dc=local"
-D "config-domain=idddomain"
```
-D "config-user-dn=cn=administrator,cn=users,dc=iddlab,dc=local"
-D "config-user-dn-password=1.Password"
-D "config-user-group-attr=memberof"
-D "config-user-id-attr=sAMAccountName"
-D "config-user-object-class=person"
-D "config-user-search-filter="
-D "config-user-search-path=cn=users"
-D "config-group-member-attr=member"
-D "config-group-name-attr=cn"
-D "config-group-object-class=group"
-D "config-group-search-filter="
-D "config-group-search-path="
-D "config-object-class=objectclass"
-D "config-active-directory=y"
-D "config-search-subtree=y"

6. Save the file and remove the .template extension.
7. Run the template script file.

After you finish

After configuring the NetWorker Authentication Service to use LDAP authentication, configure the NMC and NetWorker server to authorize the users.

Configuring authentication in NMC

After you create users in the NetWorker Authentication Service database or configure the NetWorker Authentication Service to use an external authority for authentication, configure the NMC server to enable user access.

Procedure

1. Connect to the NMC server with a NetWorker Authentication Service administrator account.
2. Click Setup.
   The Users and Roles window appears.
3. In the left navigation pane, select Users and Roles > NMC Roles. In the NMC Roles window, right-click the role and select Properties.
4. For local database users only, in the Local Users section, select the users.
5. For LDAP and AD users, in the External Roles attribute, specify the DN of the LDAP/AD users or group that require privileges to the NMC server.
   Click OK and close the NMC GUI.
6. Connect to the NMC server. When you are prompted for a username and password, specify the credentials for a user that is in the hierarchy of the DN that you specified in the External Roles attribute.
   For the username, use the following format:
   
   tenant_name\domain_name\user_name

   where:
   
   • tenant_name is the name of the tenant that you specified when you configured the external authentication authority configuration on the NetWorker Authentication Service. If you use the Default tenant, you are not required to specify the tenant name.
domain_name is the name of the domain that you specified when you configured the external authentication authority configuration on the NetWorker Authentication Service.

user_name is the name of the user in the LDAP or AD directory, which you added to the External Roles attribute or is a member of the group that you added to the External Roles attribute.

For example, to specify an AD account that is named Liam in an external authentication authority that you configured in an authentication service domain that is called IDDdomain and a tenant that is called IDD, specify the following username: IDD\IDDdomain\Liam.

Troubleshooting login errors provides information about how to troubleshoot login issues.

Example: Configure the External Roles attribute for LDAP authentication

To add the AlbertaTestGroup1 LDAP group to the Console Security Administrators group on the NMC server, perform the following steps.

1. Use LDAP Admin to connect to the LDAP server.
2. Navigate to the LDAP group, right-click on the group name, and then select Copy dn to clipboard. The following figure provides an example of the LDAP Admin window.

   ![Figure 7 Copying the group DN](image)

   **Figure 7 Copying the group DN**

3. Connect to the NMC server with the NetWorker Authentication Service administrator account.
5. In the External Roles attribute, paste the group dn value. The following figure provides an example of the group dn entry for the AlbertaTestGroup1 group.
Example: Configure the External Roles attribute for AD authentication

To add an AD group that is named NetWorker to the Console Security Administrators group on the NMC server, perform the following steps.

1. Use ADSI Edit to connect to the AD directory.
2. Navigate to the AD group, right-click on the group name and select Properties.
3. On the Attribute Editor window, select distinguishedName from the attribute list, and then select View.
4. On the String Attribute Editor window, with the entire dn highlighted, right-click in the value field and select Copy. The following figure provides an example of copying the group DN in the ADSI Editor.
5. Click **Cancel** and close ADSI Editor.

6. Connect to the NMC server with the NetWorker Authentication Service administrator account.

7. On the **Setup** windows select **Users and Roles** > **NMC Roles** > **Console Security Administrator**.

8. In the **External Roles** attribute, paste the group DN value. The following figure provides an example of the group DN entry for the NetWorker group.
Configuring LDAP and AD user access to the updated NetWorker server

In NetWorker 8.1.x and 8.2.x, you specified the name of LDAP and AD users and groups in the Users attribute of the User Group resource on the NetWorker server. In NetWorker 9.1.x, specify the dn of the LDAP and AD users and groups in the External Roles attribute of a User Group resource.

Procedure

1. On the NMC Console toolbar, select Enterprise.
2. Right-click the NetWorker server and select Launch Application.
3. On the NetWorker Administration window, select Servers.
4. In the left navigation pane, select User Groups.
5. On the User Groups window, right-click the user group to which you want to add the LDAP or AD user and group and select Properties.
6. In the External Roles attribute, specify the dn of the LDAP or AD user or group.
7. Click OK.
8. Close the NetWorker Administration and NMC windows.
9. Connect to the NMC server with an LDAP or AD user and then connect to the NetWorker server.
10. Confirm that you can view server resources, for example Directives.

Example: Adding LDAP group to the External Roles attribute

The following example uses LDAP Admin, a third party tool that allows you to view information about users and groups in the LDAP directory service.
1. Use LDAP Admin to connect to the LDAP server.

2. Navigate to the LDAP group, right-click on the group name, and then select **Copy dn to clipboard**. The following figure provides an example of the LDAP Admin window.

**Figure 11** Copying the group DN

![Example of LDAP Admin window](image)

3. Close the LDAP Admin window.

4. Paste the dn value for the group into the **External roles** attribute.

   ```
   authc_mgmt -u administrator -p "Password1" -e query-ldap-users -D
   "query-tenant=IDD" -D
   "query-domain=ldapdomain"
   ```

**Example: Adding AD group to the External roles attribute**

The following example uses ADSI Edit, a Windows tool that allows you to view information about users and groups in AD directory service. Microsoft TechNet provides the most up to date information about how to use ADSI Edit.

1. Use ADSI Edit to connect to the AD directory.

2. Navigate to the AD group, right-click on the group name and select **Properties**.

3. On the **Attribute Editor** window, select **distinguishedName** from the attribute list, and then select **View**.

4. On the **String Attribute Editor** window, with the entire dn highlighted, right-click in the value field and select **Copy**. The following figure provides an example of copying the group DN in the ADSI Editor.

![Example of copying DN in ADSI Editor](image)
5. Click **Cancel** and close ADSI Editor.

6. Paste the dn value for the group into the **External roles** attribute.

## Starting the NMC client after the first time

After you use an NMC client to connect to the NMC server, use one of the following methods to reaccess the NMC server:

### Procedure

- Type the following url in the address bar of the web browser:
  
  `http://server_name:http_service_port`

- Double-click **NetWorker Console** in the Java Web Start Application Manager.

- On Windows NMC clients, double-click the **NetWorker Management Console** desktop icon.

When you use a web browser on a host (NMC client) to connect to the NMC Server, ensure that you log in with a valid username and password. Specify the username in one of the following formats:

- For LDAP/AD authentication: `domain\username`
- For local user database authentication: `username`
- For tenant configurations: `tenant\domain\username`
NetWorker server and resource migration

After upgrading from NetWorker 8.1.x and 8.2.x to NetWorker 9.1, when you start the NetWorker processes on the NetWorker server, the process converts NetWorker 8.1.x and 8.2.x resources to the new NetWorker 9.1.x policy-based resources.

The following NetWorker 8.1.x and 8.2.x resource types do not exist in NetWorker 9.1.x:
- Group, also referred to as the savegroup or save group
- Schedule clone
- VMware policy
- NAS Device

NetWorker migrates the configuration information for each resource into new resources, which support the NetWorker Data Protection Policy framework.

The migration process creates log files on the NetWorker server, which provide information about the status of resource conversions. The log files are located in the `/nsr/logs/migration` folder on LINUX and the `C:\Program Files\EMC NetWorker\nsr\logs\migration` directory on Windows.

NetWorker creates the following files during the resource migration process.

<table>
<thead>
<tr>
<th>File name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>migration_summary_date.log</td>
<td>Provides a summary of the resource conversion status.</td>
</tr>
<tr>
<td>group_groupname.raw</td>
<td>Provides detailed information about the migration of attributes in an 8.1.x and 8.2.x Group resource, including the following information:</td>
</tr>
<tr>
<td></td>
<td>- A summary of NetWorker 8.1.x and 8.2.x attribute settings.</td>
</tr>
<tr>
<td></td>
<td>- A list of NetWorker 8.1.x and 8.2.x attributes that are deprecated in 9.1.x and are not converted.</td>
</tr>
<tr>
<td></td>
<td>- A summary of attributes with defined values that override the equivalent attribute in the Client resource.</td>
</tr>
<tr>
<td>clone_groupname.raw</td>
<td>Provides detailed information about the migration of attributes in an NetWorker 8.1.x and 8.2.x scheduled Clone resource, including the following information:</td>
</tr>
<tr>
<td></td>
<td>- A summary of NetWorker 8.1.x and 8.2.x attribute settings.</td>
</tr>
<tr>
<td></td>
<td>- A list of NetWorker 8.1.x and 8.2.x attributes that are deprecated in 9.1.x and are not converted.</td>
</tr>
</tbody>
</table>
Table 24 Migration log files (continued)

<table>
<thead>
<tr>
<th>File name</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAS_device_groupname.raw</td>
<td>Provides detailed information about the migration of attributes in an NetWorker 8.1.x and 8.2.x scheduled NAS Device resource, including the following information:</td>
</tr>
<tr>
<td></td>
<td>• A summary of NetWorker 8.1.x and 8.2.x attribute settings.</td>
</tr>
<tr>
<td></td>
<td>• A list of NetWorker 8.1.x and 8.2.x attributes that are deprecated in 9.1.x and are not converted.</td>
</tr>
<tr>
<td>VMWare_Policy_groupname.raw</td>
<td>Provides detailed information about the migration of attributes in an NetWorker 8.1.x and 8.2.x VMware Policy resource, including the following information:</td>
</tr>
<tr>
<td></td>
<td>• A summary of NetWorker 8.1.x and 8.2.x attribute settings.</td>
</tr>
<tr>
<td></td>
<td>• A list of NetWorker 8.1.x and 8.2.x attributes that are deprecated in 9.1.x and are not converted.</td>
</tr>
</tbody>
</table>

Overview of data protection policies

Data protection policy is a concept that provides you with the ability to design a data protection solution for the environment at the data level instead of at the host level. With a data protection policy, each client in the environment is a backup object and not simply a host.

Data protection policies enable you to back up and manage data in a variety of environments, as well as to perform system maintenance tasks on the NetWorker server.

A data protection policy solution encompasses the configuration of the following key NetWorker resources:

**Policies**

Policies provide you with the ability to develop a service-catalogue approach to the configuration of a NetWorker datazone. Policies enable you to manage all data protection tasks and the data protection lifecycle from a central location.

Policies provide an organizational container for the workflows, actions, and groups that support and define the backup, clone, management, and system maintenance actions that you want to perform.

**Workflows**

Workflows define the start time for a series of actions, the frequency in which the actions run, the order of actions in a sequence, and the protection group to which the workflow applies.

A workflow can be as simple as a single action that applies to a finite list of Client resources, or a complex chain of actions that apply to a dynamically changing list of
resources. In a workflow, some actions can be set to occur sequentially, and others can occur concurrently.

You can create multiple workflows in a single policy. However, each workflow can belong to only one policy. When you add multiple workflows to the same policy, you can logically group data protection activities with similar service level provisions together, to provide easier configuration, access, and task execution.

**Protection groups**
Protection groups define a set of static or dynamic Client resources or save sets to which a workflow applies. There are also dedicated protection groups for backups in a VMware environment or for snapshot backups on a NAS device. Review the following information about protection groups:

- Create one protection group for each workflow. Each group can be assigned to only one workflow.
- You can add the same Client resources and save sets to more than one group at a time.
- You can create the group before you create the workflow, or you can create the group after you create the workflow and then assign the group to the workflow later.

**Actions**
Actions are the key resources in a workflow for a data protection policy and define a specific task, for example, a backup, clone, or snapshot. NetWorker uses a work list to define the task. A work list is composed of one or several work items. Work items include client resources, virtual machines, save sets, or tags. You can chain multiple actions together to occur sequentially or concurrently in a workflow. All chained actions use the same work list.

When you configure an action, you define the days on which to perform the action, as well as other settings specific to the action. For example, you can specify a destination pool, a retention period, and a target storage node for the backup action, which can differ from the subsequent action that clones the data.

You can create multiple actions for a single workflow. However, each action applies to a single workflow and policy.

The following figure provides a high level overview of the components that make up a data protection policy in a datazone.

**Figure 13 Data Protection Policy**
Backup Group resource migration

During the migration process, NetWorker creates resources to replace each Group resource, and then migrates configuration attributes from the NetWorker 8.1.x and 8.2.x resources to the new NetWorker 9.1 resources.

Resource migration for Group resources when Snapshot is not enabled

This section summarizes the group attribute values that migrate to 9.1 resources attributes, when the group is not Snapshot enabled.

Table 25 Migration of Group attributes

<table>
<thead>
<tr>
<th>9.1 Resource type</th>
<th>9.1 Resource name</th>
<th>Migration process overview Attribute values migrated from Group resource</th>
<th>Attribute values migrated from Group resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy</td>
<td>Backup</td>
<td>One policy resource that is called Backup appears and contains all migrated information for all NetWorker group resources that backup files system and NMM data.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Protection Group</td>
<td>Name of the Group resource</td>
<td>One Protection Group resource appears for each migrated Group resource. Each Protection Group contains the same client resources that were associated with the pre-9.1 group resource.</td>
<td>Comment</td>
</tr>
<tr>
<td>Workflow</td>
<td>Name of the Group resource</td>
<td>One Workflow resource appears for each migrated Group resource. Each Workflow resource is associated with the Protection Group resource that was created for the migrated Group resource.</td>
<td>• Autostart&lt;br&gt;• Start Time&lt;br&gt;• Next Start&lt;br&gt;• Interval&lt;br&gt;• Restart Window&lt;br&gt;• End Time attribute value is set to Start Time+(Interval*(n-1))&lt;br&gt;• Probe Interval—To the Interval attribute&lt;br&gt;• Probe Start Time—To the Start Time attribute&lt;br&gt;• Probe End Time—To the End Time attribute</td>
</tr>
<tr>
<td>Probe</td>
<td>Probe</td>
<td>The Probe action resource appears when the Probe based group attribute was</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
Table 25 Migration of Group attributes (continued)

<table>
<thead>
<tr>
<th>9.1 Resource type</th>
<th>9.1 Resource name</th>
<th>Migration process overview Attribute values migrated from Group resource</th>
<th>Attribute values migrated from Group resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action—Traditional backup</td>
<td>Backup</td>
<td>The Traditional Backup action appears for a Group resource that does not have the Snapshot attribute enabled.</td>
<td>• Parallelism&lt;br&gt;- Retries&lt;br&gt;- Retry delay&lt;br&gt;- Success Threshold&lt;br&gt;- Option attributes:&lt;br&gt;  ■ No save, Verbose, Estimate, Verify Synthetic Full, Revert to full when Synthetic Full fails&lt;br&gt;- Schedule&lt;br&gt;- Schedule Time&lt;br&gt;- Retention policy&lt;br&gt;- Inactivity Timeout&lt;br&gt;- Soft Runtime Limit—To Soft Limit&lt;br&gt;- Hard Runtime Limit—To Hard Limit&lt;br&gt;- File Inactivity Threshold—To Inactivity Threshold&lt;br&gt;- File Inactivity Alert Threshold—To Inactivity Alert Threshold&lt;br&gt;- Min expiration = (1440/(backups per day/retain count))-10&lt;br&gt;- If Retain snapshot=0, then Backup snapshots attribute is set to ALL</td>
</tr>
<tr>
<td>Action—Clone</td>
<td>Clone</td>
<td>The Clone action resource appears when the Clone attribute was enabled in the Group resource.</td>
<td>Clone Pool—To the Destination Pool attribute</td>
</tr>
</tbody>
</table>
Scheduled Clone migration
The migration process creates one Clone policy for all the Scheduled Clone resources.

Table 26 Migration of Scheduled Clone attributes

<table>
<thead>
<tr>
<th>9.1 resource type</th>
<th>9.1 Resource name</th>
<th>Migration process overview</th>
<th>Attribute values migrated from the Scheduled Clone resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy</td>
<td>Clone</td>
<td>One Policy resource appears for all migrated Scheduled Clone resources.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Protection Group</td>
<td>Clone_Name_of_Scheduled_Clone_resource</td>
<td>One Protection Group appears for each migrated scheduled Clone resource. Each Protection Group contains the same save set list that was associated with the pre-9.1 Scheduled Clone resource.</td>
<td>Comment</td>
</tr>
</tbody>
</table>
| Workflow          | Name of the Scheduled Clone resource | One Workflow resource appears for each migrated Scheduled Clone resource. Each Scheduled Clone workflow is associated with the Protection Group resource that is created by the migrated Scheduled Clone resource. | • Comment  
• Start Time  
• Interval |
| Action            | Clone             | The Clone action appears for a Schedule Clone resource. | • Retention Policy  
• Destination Pool  
• Source Storage Node |

The *EMC NetWorker VMware Integration Guide* provides detailed information about VMware resource migrations.

The *EMC NetWorker Snapshot Management Integration Guide* provides detailed information about Snapshot resource migrations.

The NMM documentation provides detailed information about NMM resource migrations.

Changes to the Client and Pool resources after migration

NetWorker uses a number of attributes that are defined in multiple resources to determine which pool receives the data that is generated by an action task, and how NetWorker backs up the data. The migration process preserves the values that are defined for the attributes and introduces new attributes in the Action resource.

NetWorker provides the following attributes, which work together to determine how NetWorker manages a backup and determines which device to use to receive the backup data:
• Client resource—Pools, Retention, Save set, and Level attributes on the General tab of the Client Properties window. The migration process retains the values in these legacy attributes.

Note
The Modify Client wizard does not display the Pools, Retention, Save set, and Level attributes.

• Action resource—Destination Pool and Retention attributes on the Specify the Backup Options and Specify the Clone Options wizard windows. The backup levels are defined for the action schedule on the Specify the Action Information wizard window.

• Pool resource—Clients, Save sets, and Retention policy attributes on the Legacy tab. The values that appear in these attributes were defined in NetWorker 8.1.x and 8.2.x. After the migration completes, the NetWorker 9.1 server retains the values and these legacy attributes become read-only. You cannot modify the values in these fields after migration.

The Action resource includes an attribute that is called Client Override Behavior. The value that is selected for this attribute determines which resource attribute has precedence over the attributes in other resources that determine the same behavior. By default, the migration process enables Legacy Backup Rules on an Action resource. Legacy Backup Rules allow NetWorker to use the values during the pool selection criteria process.

Note
By default, the NetWorker Administration window does not show the legacy attributes. To view the legacy attributes in the Client Properties window, go to the View menu and select Diagnostic Mode.

Pre processing and post processing script changes
NetWorker 9.0 and later does not support the savepnpc command.

After you update the NetWorker server, clients that use savepnpc command to perform backups will fail to backup. Modify these client resources to customize the backup behavior by running pre processing and post processing commands. An error message similar to the following appears in the savepnpc.log file:

pstclntsave: RAP query returned NULL worklist.

To backup these clients in NetWorker 9.x, edit the Client resource, and perform the following steps:

• In the Backup command attribute, remove the savepnpc command.
• In the Pre command attribute, type the name of the script file that contains the commands to run before the start of the backup.
• In the Post command attribute, type the name of the script file that contains the commands to run after the backup completes.

The section "Backup command customization: in the EMC NetWorker Administration Guide provides more about the Pre command and Post command attributes and how to configure a client that requires pre processing and post processing commands.
Client resource overrides

NetWorker 9.1.x enables you to define a schedule, destination pool, retention policy, and destination storage node for each backup action that you configure.

NetWorker 8.1.x and 8.2.x allowed you to define a schedule, destination pool, retention policy, and destination storage node value for each Group and Client resource.

When you assigned a value to any of these attributes in the Group resource, that value was applied to all data generated by each client in the group.

When you assigned a value to any of these attributes in the Client resource, that value was applied to all data generated by the client and took precedence over the value that was defined in the equivalent Group resource attribute.

The updating process retains these Client resource values but sets the attributes values to read-only.

The Client resource has the following attributes in common with the Action resource: Schedule, Pool, Retention, and Storage Node. The NetWorker 9.1.x Action wizard provides you with the ability to define which resource attribute takes precedence, the value that is defined in the Action resource or the value that is defined in a Client resource. The selection that you make in the Client Override Behavior list determines which attribute values take precedence. The following table summarizes each option.

<table>
<thead>
<tr>
<th>Option</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Can Override</td>
<td>The values in the Client resource for Schedule, Pool, Retention policy, and the Storage Node attributes take precedence over the values that are defined in the equivalent Action resource attributes.</td>
</tr>
<tr>
<td>Client Cannot Override</td>
<td>The values in the Action resource for the Schedule, Destination Pool, Destination Storage Node, and the Retention attributes take precedence over the values that are defined in the equivalent Client resource attributes.</td>
</tr>
</tbody>
</table>
| Legacy Backup Rules     | This value only appears in actions that are created by the migration process. The updating process sets the Client Override Behavior for the migrated backup actions to Legacy Backup Rules. This value handles the Schedule, Pool, Retention, and Storage Node values in the following way:

- If a value is defined in the Retention Policy attribute of the Group resource, then the value that is defined in the Retention attribute of the Action resource takes precedence. If a value is not defined in the Group resource, then... |
Table 27 Client override behaviors (continued)

<table>
<thead>
<tr>
<th>Option</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>the attribute that is defined in the Client resource takes precedence.</td>
</tr>
<tr>
<td></td>
<td>- If a value is defined in the Schedule attribute of the Group resource, then the value that is defined in the Schedule attribute of the Action resource takes precedence. If a value is not defined in the Group resource, then the attribute that is defined in the Client resource takes precedence.</td>
</tr>
<tr>
<td></td>
<td>- If a value is defined in the Pool attribute of the Client resource, the value that is defined in the Client resource is used. If a value is not defined in the Client resource, then the action sends the data to a pool that best matches the pool selection criteria.</td>
</tr>
</tbody>
</table>

Note
You can edit the Action resource and change the Client Override Behaviour attribute to Client Can Override or Client Cannot Override, but after you save the change to the Action resource, you cannot set the attribute back to Legacy Backup Rules.

Changes to the schedule resource and levels

NetWorker allows you to configure attributes in the Action resource that define the schedule for the task, and for a backup or clone task, the level.

When you configure an Action resource in NetWorker 9.1.x, the Action wizard provides you with the ability to define the schedule, schedule overrides, and level for the data that is generated by the task.

In NetWorker 8.1.x and 8.2.x, you assigned a pre-configured or user-configured backup schedule to the Group and Client resources. When you assigned the schedule or a level to the Group resource, the values were applied to all the backup and clone data generated by each client in the group. When you assigned the schedule or level to the Client resource, the values were applied to all the backup and clone data generated by the client and took precedence over the values that were defined in the Group resource.

The updating process migrates existing values in the Schedule and Level attributes in the Group resource to the Action resource. NetWorker 9.1.x does not support backup levels 2–9. When the update process encounters a schedule with a backup level 2–9, NetWorker changes the level to 1. The update process retains the level and schedule attributes that were defined in the Client resource.
The Client resource overrides section describes how NetWorker 9.1.x determines the schedule that a task uses when an action is performed on a client and both the Client resource and Action resource define a schedule.

Changes to save set policies

NetWorker 9.1.x does not separate the length of the browse time for a save set from the length of the retention time for a save set. Information about a backup or clone save set remains in the client file index and media database for the length of time that is defined by the retention policy.

When you configure an Action resource in NetWorker 9.1.x, the Action wizard provides you with the ability to define the retention policy for the data that is generated by the task.

In NetWorker 8.1.x and 8.2.x, you assigned a browse and retention policy to the Group and Client resources. When you assigned a browse or retention policy to the Group resource, the value that is applied to all the data that is generated by each client in the group. When you assigned a policy to the Client resource, the value that is applied to all the data that is generated by the client.

The updating process performs the following tasks:

- Migrates the existing value in the Retention Policy attribute in the Group resource to the Action resource.
- Modifies the browse time for all save sets in the media database to match the retention time.
- Modifies the Browse policy in the Client resource to match the existing value in the Retention Policy attribute, and make the attribute read-only.
- Retains the value that is defined in the Retention Policy attribute that was defined in the Client resource.

The Client resource overrides section describes how NetWorker 9.1.x determines the retention policy that a task uses when an action is performed on a client and both the Client resource and Action resource define a retention policy.

Changes to the save set expiration process

NetWorker 9.1.x expires save set information in the media database and client file index as a separate action, in the Server backup workflow, which is part of the Server Protection policy.

In NetWorker 8.1.x and 8.2.x, the NetWorker server ran an nsrim process once every 24 hours to remove information about eligible save sets from the client file index and mark eligible save sets as recoverable or recyclable in the media database.

NetWorker 9.1.x creates a Policy resource that is called the Server Protection policy. The Server Protection Policy contains the Server Protection group. The Server Protection group is associated with the Server backup workflow, which starts the Expiration action daily at 10 a.m.

Expiration

The expiration action expires save sets in the media database based on retention time of the save set. When the retention time of the save set has been reached, NetWorker uses the nsrim process to expire the save set. When a save set expires, the nsrim process performs the following actions:

- Removes information about the save set from the client file index.
- If the save set data resides on an AFTD, removes the save set information from the media database and removes the save set data from the AFTD.
If the save set data resides on a tape device, the nsrim process marks the save set as recyclable in the media database. When all save sets on a tape volume have expired, the volume is eligible for reuse.

An expiration action is created automatically in the Server maintenance workflow of the Server Protection policy. An expiration action only supports Execute and Skip backup levels.

Changes to bootstrap and index backups

NetWorker 9.1.x performs a bootstrap and index backup as separate backup action in the Server backup workflow, which is part of the Server Protection policy.

In NetWorker 8.1.x and 8.2.x, NetWorker performs a bootstrap backup when the operations in a group that contains the NetWorker server completes. If the NetWorker server Client resource does not appear in an active Group resource, the bootstrap backup every time a group completes, even when the backup level is set to skip.

NetWorker 9.1.x creates a policy resource that is called the Server Protection policy. The Server Protection Policy contains the Server Protection group. The Server Protection group is associated with the Server backup workflow, which starts the Server database backup action daily at 10 a.m.

Server database backup

A server database backup action performs a bootstrap backup and can also include the client file indexes.

A bootstrap backup contains the following NetWorker server components:

- Media database
- Server resource files. For example, the resource (res) database and the Package Manager database (nsrcpd)
- NetWorker Authentication Service database

NetWorker automatically creates a server backup action in the Server Backup workflow of the Server Protection policy. By default, a full backup of the media database, resource files, and the NetWorker Authentication Service database occurs daily. A full backup of the client file indexes occur on the first day of the month. An incremental backup of the client file indexes occur on the remaining days of the month. The default retention policy for the server database backup is one month.

The migration process may not assign the bootstrap backup to the pool that was configured in NetWorker 8.1.x and 8.2.x. You can edit the Server database action in the NetWorker Administration window and change the destination pool value or use the nsrpolicy command to update the pool. For example:

```
nsrpolicy action update server-backup -p "Server Protection" -w "Server backup" -A "Server db backup" --destination_pool pool_name
```

Changes to the NMC database backup

NetWorker 9.1.x performs an NMC database backup as separate backup action in the NMC Server backup workflow, which is part of the Server Protection policy. The NMC database backup action creates a staging directory for the database files, performs a backup of the staging directory, and then deletes the contents of the staging directory.

In NetWorker 8.1.x and 8.2.x, the NMC server configuration process created a Client resource for NMC database backups on the NetWorker server. The Client resource contained the following value in the Save set attribute:

```
NMCASA:/gst_on_server_name/lgto_gst
```
where server_name is the short name of the NMC server host.

When the update process detects a Client resource for the NMC backup, NetWorker migrates the Client resource, but does not add it to the Protection Group associated with NetWorker 8.1.x and 8.2.x Group resource that contained the NMC Client resource. The migration process makes the following attribute changes to the Client resource for the NMC server database backup:

- Updates the value in the Save set attribute. The Save set field for the client contains the path to the database staging directory. By default, the staging directory is in C:\Program Files\EMC NetWorker\Management \nmcdb_stage on Windows and /opt/lgtonmc/nmcdb on Linux.

Note

The file system that contains the staging directory must have free disk space that is at least equal to the size of the current NMC database. The EMC NetWorker Administration Guide describes how to change the staging directory.

- Clears the values in the Level and Retention attributes.

When you log in to the NMC server for the first time after an update, the configuration wizard prompts you to define the NetWorker server that will backup the NMC database. When you configure the NMC database backup, the NetWorker server performs the following actions:

- Creates a group called NMC server.
- Adds the Client resource to the NMC server group.
- Creates a workflow that is called NMC server backup in the Server Protection policy. The workflow contains the NMC server backup action, which performs a full backup of the NMC server database every day at 2 P.M.
- Adds the NMC server group to the NMC server backup workflow.

Customizing the NMC database backup

After you update the NetWorker server, modify the NMC-specific resources in the Server Protection policy to define the backup configuration.

Procedure

1. In the Administration window, click Protection.
2. In the left navigation pane, expand Policies, and then expand Server Protection.
3. In the right window pane, on the Actions tab, edit the NMC server backup action.

   The Policy Action Wizard appears, starting with the Specify the Action Information window.
4. Select whether to use a weekly or monthly schedule for the action:
   - To specify a schedule for each day of the week, select Weekly by day.
   - To specify a schedule for each day of the month, select Monthly by day.
5. Click the icon on each day to specify the backup level to perform. The following table provides details about the supported NMC server backup level that each icon represents.
Table 28 Backup levels

<table>
<thead>
<tr>
<th>Icon</th>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Full icon]</td>
<td>Full</td>
<td>Perform a full backup on this day. Full backups include all files, regardless of whether the files changed.</td>
</tr>
<tr>
<td>![Incr icon]</td>
<td>Incr</td>
<td>Perform an incremental backup on this day. Incremental backups include files that have changed since the last backup of any type (full or incremental).</td>
</tr>
<tr>
<td>![Skip icon]</td>
<td>Skip</td>
<td>Do not perform a backup on this day.</td>
</tr>
</tbody>
</table>

Note

The NMC server database backup only supports the full and skip backup levels. If you edit the NMC server backup action and change the levels in the backup schedule to a different level, for example synthetic full, NetWorker performs a full backup of the database.

6. Click Next.

   The Specify the Backup Options page appears.

7. From the Destination Storage Node box, select the storage node with the devices on which to store the backup data.

8. From the Destination Pool box, select the media pool in which to store the backup data.

9. From the Retention boxes, specify the amount of time to retain the backup data.

   After the retention period expires, the save set is removed from the client file index and marked as recyclable in the media database during an expiration server maintenance task.

   When you define the retention policy an NDMP client, consider the amount of disk space that is required for the client file index. NDMP clients with several thousands of small files have significantly larger client file indexes on the NetWorker server than a non-NDMP client. A long retention policy for an NDMP client increases disk space requirements on the file system that contains the client file indexes.

10. Click Next.

    The Specify the Advanced Options page appears.

11. In the Retries box, specify the number of times that NetWorker should retry a failed probe or backup action, before NetWorker considers the action as failed. When the Retries value is 0, NetWorker will not retry a failed backup or probe action.
12. In the **Retry Delay** field, specify a delay in seconds to wait before retrying a failed backup or probe action. When the **Retry Delay** value is 0, NetWorker retries the failed backup or probe action immediately.

*Note*

The **Retry Delay** option only applies to probe actions, and the backup actions for the Traditional and Snapshot action types. When you specify a value for this option in other actions, NetWorker ignores the values.

13. In the **Inactivity Timeout** field, specify the maximum number of minutes that a job run by an action is allowed to fail to communicate back to the server.

   If the job fails to respond within the timeout value, the server considers the job a failure. If a job fails, NetWorker retries the job immediately. This ensures that no time is lost due to failures.

   Increase the timeout value if a backup consistently aborts due to inactivity.

   Inactivity timeouts may occur for backups of large save sets, backups of save sets with large sparse files, and incremental backups of many small static files.

*Note*

The **Inactivity Timeout** option only applies to probe actions, and the backup actions for the Traditional and Snapshot action types. When you specify a value for this option in other actions, NetWorker ignores the values.

14. In the **Parallelism** field, specify the maximum number of concurrent operations for the action.

*Note*

The **Parallelism** value should not exceed 25.

For Direct-NDMP backups, set the parallelism value to the number of available NDMP drives.

If you set the parallelism attribute to a higher value, there will not be enough drives to support all the queued backup save sets. Large save sets might fail due to the inactivity timeout limit.

When NDMP groups back up simultaneously, divide the number of drives by the number of groups. Use this value for each of the parallelism attributes.

Setting the parallelism value for the group overrides the parallelism value that is defined for the NDMP clients.

15. From the **Failure Impact** list, specify what to do when a job fails:

   - To continue the workflow when there are job failures, select **Continue**.
   - To abort the current action if there is a failure with one of the jobs, but continue with subsequent actions in the workflow, select **Abort action**.
The **Abort action** option only applies to probe actions, and the backup actions for the Traditional and Snapshot action types.

- To abort the entire workflow if there is a failure with one of the jobs in the action, select **Abort workflow**.

If any of the actions fail in the workflow, the workflow status does not appear as interrupted or cancelled. NetWorker reports the workflow status as failed.

16. From the **Soft Limit** list, specify the amount of time after the action starts to stop the initiation of new activities. The default value of 0 (zero) indicates no limit.

17. From the **Hard Limit** list, specify the amount of time after the action starts to begin terminating activities. The default value of 0 (zero) indicates no limit.

18. Optional, configure overrides for the task that is scheduled on a specific day.

   To change the month on which to schedule the override, use the navigation buttons and the month list box. To change the year, use the spin boxes. You can set an override in the following ways:

   - Select the day in the calendar, which changes the action task for the specific day.
   - Use the action task list to select the task, then perform one of the following steps:
     - To define an override that occurs on a specific day of the week, every week, select **Specified day**, then use the drop downs. Click **Add Rules based override**.
     - To perform the action task on the last day of the calendar month, select **Last day of the month**. Click **Add Rules based override**.
     - In the **Override** field, type an override.

   To remove an override, delete the entry from the **Override** field.

19. From the **Send Notifications** list box, select whether to send notifications for the action:

   - Select **Set at policy level** to use the notification configuration that is defined in the Policy resource to send the notification.
   - Select **On Completion** to send a notification on completion of the action.
   - Select **On Failure** to send a notification only if the action fails to complete.

20. In the **Send notification** attribute when you select the **On Completion** or **On failure** option, the **Command** box appears. Use this box to configure how NetWorker sends the notifications. You can use the `nsrlog` action to write the notifications to a log file or configure an email notification.

   The default notification action is to log the information to the `policyNotifications.log` file. The `policyNotifications.log` file is located in the `/nsr/logs` directory on Linux and the `C:\Program Files` directory on Windows.
\EMC NetWorker\nsr\logs folder on Windows, by default. You can use the smtpmail application on Windows or the default mailer program on Linux to send email messages.

For example:

- To log notifications to a file named policy_notifications.log, type the following command:
  
  `nsrlog -f policyNotifications.log`

- On Linux, to send a notification email, type the following command:

  `mail -s subject recipient`

- On Windows, to send a notification email, type the following command:

  `smtpmail -s subject -h mailserver recipient1@mailserver recipient2@mailserver...`

  where:

  - `-s subject`—Includes a standard email header with the message and specifies the subject text for that header. Without this option, the smtpmail program assumes that the message contains a correctly formatted email header and nothing is added.

  - `-h mailserver`—Specifies the hostname of the mail server to use to relay the SMTP email message.

  - `recipient1@mailserver`—Is the email address of the recipient of the notification. Multiple email recipients are separated by a space.

21. Click Next.

   The Action Configuration Summary page appears.

After you finish

(Optional) Create a clone action to automatically clone the save sets after the NMC server backup. The *EMC NetWorker Administration Guide* describes how to configure a clone action for the NMC server backup.
CHAPTER 10

Troubleshooting NMC GUI and NetWorker Server Connection Issues

This chapter includes the following topics:

- Troubleshooting authorization errors and NetWorker server access issues...... 178
- Troubleshooting NetWorker daemon or service startup issues......................... 179
- Troubleshooting NMC GUI and NetWorker server connection issues.............. 180
Troubleshooting authorization errors and NetWorker server access issues

This section provides a list of possible causes and resolutions for error messages that are related to NetWorker Server authorization issues.

Insufficient permissions
This message appears when the user that you used to log in to the NMC server is a member of many operating system groups and you try to perform NetWorker operations.

When a user belongs to many groups, the total number of characters in the group names can exceed the buffer size that NetWorker allots for the group names. NetWorker excludes characters and group names that exceed the buffer size.

To resolve this issue, edit the Usergroup resource to which the user belongs, and then specify the DN for the user in the External Roles field.

Token has expired
This message appears when the NMC GUI is open and the token expires for the authenticated user.

To resolve this issue:

1. Click OK. The Enter Credentials window appears.
2. In the Enter Credentials window, specify the user password, and then click OK. The NetWorker Authentication Service validates the user credentials and, if the validation succeeds, generates a new session token.

Unable to connect to server: Unable to set user privileges based on user token for SYSTEM: security token has expired
This message appears when the NetWorker Administration window is open and the token expires for the authenticated user.

To resolve this issue:

1. Click OK. The NetWorker Administration window closes.
2. In the Console GUI, select the NetWorker server, and then select Launch NetWorker Administration. The Enter Credentials window appears.
3. In the Enter Credentials window, specify the password of the user, and then click OK. The NetWorker Authentication Service validates the user credentials and if the validation succeeds, generates a new token for the session.

Unable to query resource database: security token has expired
This message appears when you run a CLI tool as an authenticated user but the user token has expired.

To resolve this issue, run the nsrlogin command to generate a new token for the user.
Troubleshooting NetWorker daemon or service startup issues

This section provides a list of possible causes and resolutions for error messages that are related to issues starting NetWorker processes.

**Error spawning NetWorker_installation_directory\rabbitmq-server-3.2.4\erts-5.10.4\bin\epmd -daemon (error 0)**

This error message appears in the daemon.raw file on a Windows NetWorker server when 8.3 filename support is disabled on the drive that contains the NetWorker binaries or the 8.3 short name for the NetWorker_installation_directory is absent.

By default, the NetWorker_installation_directory structure contains the EMC directory, which Windows shortens to EMCNET~1. When 8.3 filename support is disabled on the drive that contains the NetWorker binaries or the 8.3 short name for the NetWorker_installation_directory is absent, Windows cannot find the path to the NetWorker binaries, and NetWorker services fail to start.

Use the `dir` command in the directory that contains the NetWorker_installation_directory, to determine if the 8.3 short name is absent for the NetWorker_installation_directory.

For example:

- The following `dir` output shows that the EMC NetWorker directory does not have an 8.3 name:

  ```
  C:\Program Files>dir /x EMC*
  Volume in drive C has no label.
  Volume Serial Number is 5C7F-A00F
  Directory of C:\Program Files
  05/02/2016  10:10 AM    <DIR>                       EMC
  NetWorker
  ```

- The following `dir` output shows that the EMC NetWorker directory has the 8.3 name EMCNET~1:

  ```
  C:\Program Files>dir /x EMC*
  Volume in drive C has no label.
  Volume Serial Number is 5C7F-A00F
  Directory of C:\Program Files
  05/02/2016  10:10 AM    <DIR>          EMCNET~1     EMC
  NetWorker
  ```

To resolve this issue, enable 8.3 filename support, and then set the short name for the NetWorker_installation_directory:

1. Ensure that all NetWorker services are stopped.
2. From a command prompt, change to the root directory of the drive that contains the NetWorker installation files.
   For example, `cd C:\`
3. Use the `fsutil` command to enable 8.3 filename support.
   For example: `fsutil behavior set disable8dot3 0`
4. Use the `fsutil` command to set the short name of the installation directory to the actual name of the installation directory. For example to set the EMC NetWorker directory to the short name EMCNET~1, type:

```
fsutil file setshortname "EMC NetWorker" EMCNET~1
```

5. Type the command "\NetWorker_installation_dir\nsr\rabbitmq-server-3.2.4\bin\rabbitmq-server.bat" status, and then confirm that the output does not display the **Error spawning** message.

6. Start the NetWorker services.

**Note**

Check each directory name in the path to the `NetWorker_installation_directory`. If a directory name is not a valid 8.3 short name, you must set a short name for it.

---

**Troubleshooting NMC GUI and NetWorker server connection issues**

Review this section for information to help you troubleshoot issues that prevent you from connecting to the NMC GUI.

**An error occurred while validating user credentials. Verify that NetWorker Authentication Service is running.**

This error message appears when the NMC server cannot validate user credentials with the NetWorker Authentication Service.

This message can occur for more than one reason:

- The NetWorker Authentication Service daemon did not start on the NetWorker Server that authenticates the NMC Server because another application has started an Apache Tomcat instance on the same service port. In the situation, the following error message also appears in the Catalina log file: `SEVERE: Failed to initialize end point associated with ProtocolHandler ["ajp-bio-8009"] java.net.BindException: Address already in use: JVM_Bind <null>:8009`

The location of the Catalina log file differs on Windows and Linux:

- **Linux:** `/nsr/authc/tomcat/logs/catalina.out`
- **Windows:** `C:\Program Files\EMC NetWorker\nsr\authc-server\tomcat\logs\catalina.date.log`

To resolve this issue, perform the following steps:

1. Use the `netstat` command on the NetWorker Server to determine which application is using the same port as the NetWorker Authentication Service:
   
   - On Linux: `netstat -anbo | grep port_number`
   - On Windows: `netstat -anp | findstr port_number`

2. Remove the application that starts the other Apache Tomcat instance or change the listening port that the application uses.

3. Restart the NetWorker processes on the NetWorker Server.

- The firewall configuration prevents the NMC Server from contacting the NetWorker Authentication Service on the NetWorker Server.
To resolve this issue, ensure that the firewall rules allow communication between the NMC server and NetWorker server on the port that you configured for the NetWorker Authentication Service. The default port is 9090.

Unable to detect Java Runtime Environment

This error message appears on the NMC landing page when you try to connect to the NMC Server from a web browser.

Also, the Start button does not appear on the landing page, and the following error message appears:

Attention: 32-bit web browsers require a 32-bit JRE and 64-bit web browser require a 64-bit JRE.

The following image provides an example of the landing page with the error message.

Figure 14 NMC landing page with JRE error message

Warning: Unable to detect Java™ Runtime Environment

ATTENTION: 32-bit web browsers require a 32-bit JRE and 64-bit web browsers require a 64-bit JRE.

A supported version of Java™ Runtime Environment (JRE™) cannot be detected by this web browser. The JRE must be installed in order to run NetWorker Management Console. However, if you already installed required JRE version, click here to start NetWorker Management Console.

This message appears when 32-bit JRE is not installed on the host.

To work around this issue when you have the 64-bit JRE installed on the host, click the here hyperlink to download the gconsole.jnlp file, and then use the JNLP file to start the NMC GUI.

To resolve this issue, download the latest update of 32-bit JRE 1.8.
Unable to verify Authentication Server's hostname and/or port

This error message appears when you try to connect to the NMC GUI but the Windows firewall on the NetWorker server is preventing inbound connections by the java.exe file.

The following detailed message also appears:

If you were prompted, but did not install the certificate, try again by selecting view certificate and installing it under root certification authority.
If no prompt was made for certificate validation, then verify that the Networker Authentication service is running on the configured host and port

Alternately, this error message might appear:

An error occurred while validating user credentials. Verify that NetWorker Authentication Service is running. [Failed to connect to NW_SERVER; No error Server Message: Make sure that server is running.]

To resolve this issue, use the netsh command to create an inbound rule for the java.exe process on the NetWorker server.

For example:

```
netsh advfirewall firewall add rule name="Java - Allow with NetWorker 9" dir=in action=allow program="%PATH%\java.exe"
```

where %PATH% is the path to the java.exe file. For example, C:\Program Files \Java\jre1.8.0_73\bin

Unable to display to Console server web page

If the NMC server web page, for example, http://houston:9000, does not display on the NMC client, use the following procedure.

Procedure

1. Verify that the gstd, postgres, and httpd processes are started on the NMC server.
2. Confirm that you specified the correct port number to connect to the NMC server. The default port number that you use to connect to the NMC server is 9000, but the installation process allows you to specify a different port number.

To determine the service port:

a. Review the NMC configuration file on the NMC server. The location of the file differs on Windows and Linux:
   - Linux: /opt/lgtonmc/etc/gstd.conf
   - Windows: C:\Program Files\EMC NetWorker\Management\GST\etc\gstd.conf

b. Confirm the port numbers that are defined for the NMC server:
db_svc_port=port_number
http_svc_port=9000

c. Try to connect to the NMC server by using the defined port.

3. Review the gstd.raw file.

If the gstd.raw file reports the following error, you must check that the firewall configuration does not block the required ports:

Aborting due to: Connection timed out, then confirm that the required ports are open on the firewall to enable the console client to connect to the Console server.

By default, the required ports are:

- 9000
- 9001
- 5432

The EMC NetWorker Security Configuration Guide provides more information about how to determine the required ports for NetWorker hosts.

Unable to connect to the NMC server

An attempt to connect to the NMC server from the web page can fail with the following error messages.

Javascript is required. If security settings of the browser do not allow JavaScript, or JavaScript is disabled, please enable it.

This error message appears when you try to connect to the NMC Server with Internet Explorer and JavaScript is disabled.

Use the following procedure to enable JavaScript.

Procedure

1. From the Internet Explorer menu bar, select Tools > Internet Options.
2. On the Security tab, click Custom level.
3. Click Scripting > Active Scripting, select Enable.
4. Click OK.

Error: Could not authenticate this username and password

This error message appears when you try to log in to the NMC GUI. To resolve this issue, perform one or more of the following tasks.

- Ensure that you specify the correct username and password.
- Clear the Java Temporary Internet files on the NMC client.
- Delete any desktop shortcuts that were used to connect to the NMC server before the NMC server update, and then re-create the shortcuts.
Error: Problem contacting server (ip_address): Connection timed out: connect

This error occurs when the IP address or hostname of the NMC server changes and you do not reconfigure the .jnlp file on the NMC server.

Use the following procedure to reconfigure the .jnlp file.

Procedure
1. Log in to the NMC server as root on Linux or administrator on Windows.
2. Run the gstconfig command from the following directory location:
   - Linux: /opt/lgtonmc/bin
   - Windows: C:\Program Files\EMC NetWorker\Management\GST\bin
3. Start the gstd daemon on the NMC server.
   - On Linux: /etc/init.d/gst start
   - On Windows: Start the EMC GST Service services.

Internal server error when connecting to the NMC server using the FQDN

Some versions of Internet Explorer 11 cannot connect to the NMC Server when you specify the FQDN of the NMC Server in the URL.
A message similar to the following appears:

Internal Server Error
The server encountered an internal error or misconfiguration and was unable to complete your request.
Please contact the server administrator, @@ServerAdmin@@ and inform them of the time the error occurred, and anything you might have done that may have caused the error to occur.
More information about this error may be available in the server error log.

To resolve this issue, disable Enable Enhanced Protected Mode.

Procedure
1. From the Internet Explorer Tools menu, select Internet Options.
2. On the Advanced tab, in the Settings group box, clear Enable Enhanced Protected Mode.
3. Close the Internet Explorer application.
4. Open the Internet Explorer application and connect to the NMC server.

Application blocked for security

This message appears on an NMC client when the Java cache was not cleared after an update to the NMC Server software.

Error messages similar to the following also appear in the message box: Failed to validate certificate. The application will not be executed.

To resolve this issue, clear the Java cache on the NMC client.
Unable to launch NetWorker Management Console

This message appears on an NMC client when the Java Cache was not cleared after an update to the NMC server software.

To resolve this issue, clear the Java Cache on the NMC client.

Error: error while loading shared libraries: libsasl2.so.2: wrong ELF class: ELFCLASS64

This message occurs on 64-bit Linux systems, when you do not install the 32-bit version of the cyrus-sasl package.

To resolve this issue, perform the following steps.

Procedure

1. Log in to the NMC server, as root.
2. Install the 32-bit operating system cyrus-sasl package.
3. Start the NMC daemons, by typing the following command:
   
   /etc/init.d/gst start

   This action also starts the postgres and httpd processes.

   **NOTICE**

   If the /etc/init.d/gst file does not exist, run the /opt/lgtonmc/bin/nmc_config script.

   Multiple Postgres processes appear. Two or more httpd processes appear. The parent httpd process runs as root and the child process runs as the username that was specified during the installation.

Unable to start gstd process on NMC server

This section describes how to troubleshoot issues that occur when the NMC client cannot connect to the NMC Server because the gstd process does not start.

When the gstd daemon does not start on the NMC Server, review the following log files to obtain the exact error message:

- gstd.raw
- web_output

The following directories contain the NMC Server log files:

- Linux: /opt/lgtonmc/logs
- Windows: C:\Program Files\EMC NetWorker\Management\GST\logs

Common NMC Server start-up errors include the errors that are described in the following sections.

Error: 'Web server exited unexpectedly.'

The following error appears when the httpd process is not running on the NMC Server.

This error appears “Web server exited unexpectedly”. Possible reasons include: previous instance of %s is still running. Please see 'web_output' file in this product's logs directory for the web server's output messages.”
Common reasons for httpd start-up failures include:

- Another process is using the default 9000 httpd web service port.
- On LINUX, an orphaned httpd process is running on the console server. End the process by sending the SIGTERM signal, `kill -TERM`. Do not use the `kill -9` command.
- On Windows, another application is using the Apache server and the httpd daemon requires more time to start up.

Use the following procedure to enable the delayed start option for the EMC gstd process.

**Procedure**

1. In the **Services** applet:
   a. Right-click the EMC gstd service.
   b. Select **Properties**.

2. On the **General** tab, change the **Startup type** to **Automatic (delayed start)**.

3. Click **OK**.

4. Stop the EMC gstd service.

5. Start the EMC gstd service.

6. When you update the NetWorker software, enable the delayed start setting again.

**Error: error while loading shared libraries: libsasl2.so.2: wrong ELF class: ELFCLASS64**

This message appears on 64-bit Linux systems when the 32-bit version of the `cyrus-sasl` package is not installed. Use the following procedure to resolve this issue.

**Procedure**

1. Install the 32-bit version of the `cyrus-sasl` package.

2. Start the `gstd` daemon:
   
   ```
   /etc/init.d/gst start
   ```

**Error: ‘gstd: Internal error: could not get database handle.’**

This error appears when the `postgres` process cannot start. Review the `db_output.log` file for specific errors.

Common reasons for this error include the following.

- Insufficient disk space in the file system that contains the NMC database directory.
- An orphaned `postgres` process is running on the NMC server.
  - On Linux, end the process by sending the SIGTERM signal, `kill -TERM`.

**Note**

Do not use `kill -9`.

- On Windows, stop the EMC GST database service and then start the service.
• The NMC server is running an unsupported version of JRE.

**Warning: unable to detect Java Runtime Environment**

This message appears when the JRE is not installed on the NMC client. For Windows only, the JRE version that is installed on the Console client does not match the Microsoft Internet Explorer version.

This message appears on 64-bit Windows systems when you use one of the following combinations:

- 64-bit version of the browser to connect to the NMC server, but the 32-bit version of JRE is installed.
- 32-bit version of the browser to connect to the NMC server, but the 64-bit version of JRE is installed.

To resolve this issue:

- Install JRE on the NMC client.
- For Windows only, install the correct JRE program for the installed Microsoft Internet Explorer version.
  - For the 32-bit version of the browser, install the 32-bit version of JRE.
  - For the 64-bit version of the browser, install the 64-bit version of JRE.

Use the following procedure to determine the Microsoft Internet Explorer version on the Windows NMC client.

**Procedure**

1. Right-click the **Microsoft Internet Explorer** shortcut and select **Properties**.
2. Review the **Target Path** field.
   - The target path is one of the following locations:
     - C:\Program Files (x86)\Internet Explorer\ for the 32-bit version of Microsoft Internet Explorer.
     - C:\Program Files\Internet Explorer\ for the 64-bit version of Microsoft Internet Explorer.

**Unable to connect to server: Failed to contact using UDP ping**

This message appears when the NMC GUI fails to connect to the NetWorker Server because the NetWorker daemons are not running on the NetWorker Server.

To resolve this issue, start the daemons on the NetWorker Server and try to connect to the NetWorker Server again.

**Cannot log in to the NMC server with Firefox**

On a Linux NMC client, a message similar to the following can appear when you use Firefox to log in to the NMC Server.

**Internal Server Error** The server encountered an internal error or misconfiguration and was unable to complete your request. Please contact the server administrator, @@ServerAdmin@@ and inform them of the time the error occurred, and anything you might have done that may have caused the error. More
information about this error may be available in the server error log.

Use the following procedure to resolve this issue.

**Procedure**

1. Remove the classic plug-in file, `libjavaplugin_oji.so`, which is located in the Firefox plugins directory and remove any associated symbolic links.

2. Create a symbolic link to the Java Plugin `libnpjp2.so` file in the Firefox plugins directory:

   ```
   cd Firefox/plugins
   ln -s JRE/lib/arch/libnpjp2.so .
   ```

   where:
   - `Firefox` is the installation path.
   - `JRE` is the Java installation path.
   - `arch` is the directory appropriate to the computer architecture.
   - For SuSE11 only, install these operating system packages:
     - `glibc-locale-2.11.1`
     - `glibc-locale-32bit-2.11.1`

   Without these packages, a message similar to the following appears and you cannot log in to the NMC Server:

   **Internal Server Error**
   
   The server encountered an internal error or misconfiguration and was unable to complete your request. Please contact the server administrator, @@ServerAdmin@@ and inform them of the time the error occurred, and anything you might have done that may have caused the error. More information about this error may be available in the server error log.

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**Using IPv6 addresses to connect to the NMC GUI**

If the NMC Server uses IPv4 and IPv6 addresses, you can configure the JRE application on the host that you use to connect to the NMC GUI to use the IPv6 address to connect to the NMC Server.

Perform the following steps on the host that you use to connect to the NMC GUI.

**Procedure**

1. Close down any web browser sessions that use Java.

2. Configure the `JAVAWS_VM_ARGS` environment variable.

   - On Windows, perform the following steps:
     b. On the Advanced tab, click Environment Variables...
     c. In the System Variables section, click New.
     d. In the Variable name field, type `JAVAWS_VM_ARGS`.
     e. In the Variable value field, type `-Djava.net.preferIPv6Addresses=true`

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Troubleshooting NMC GUI and NetWorker Server Connection Issues

Unable to connect to server: Unable to set user privileges based on user token for username: Unable to validate the security token

This error message appears when you try to connect to a NetWorker server that is not the host that authenticates the NMC users.

To resolve this issue, establish a trust between the NMC server and the NetWorker server, and then configure user access. "Configuring the NMC server to manage additional NetWorker servers" provides more information.

JAVA_HOME environment variable might not be set correctly. Ensure that JAVA_HOME is set to 64-bit JRE directory.

This message appears when the JAVA_HOME environment variable is not set to the 64-bit JRE version. On the NetWorker Server, the nsrd daemon does not start. During the installation process, the following error message might appear: Service 'NetWorker Backup and Recover Server' (nsrd) failed to start. Verify that you have sufficient privileges to start system services. To resolve this issue, set the JAVA_HOME environment variable to the directory for the 64-bit JRE software.

Procedure

1. Log in to the target host with a user that has administrator privileges.
3. On the Advanced tab, click Environment Variables...
4. In the System Variables section, click New.
5. In the Variable name field, type JAVA_HOME.
6. In the Variable value field, type the path to the Java directory.
   For example, C:\Program Files\Java\jre1.8.0_xx
7. Click OK.
8. Click OK to close the Environment Variables window, and then click OK to close the System Properties window.